Certificate of Test

NCT Co., Ltd. 211-71, Geumgok-ro, Hwaseong-si, Gyeonggi-do, 18511, Korea (Tel: +82-31-323-6070 / Fax: +82-31-323-6071)	Report No.: NW2011-F008 Page (1) / (43)	Your business' success starts with NCT

1. **Client**
   - ○ Name : SENA TECHNOLOGIES.Inc
   - ○ Address : 19, Heolleung-ro 569-gil, Gangnam-gu, Seoul, Korea
   - ○ Date of Receipt : 2020-09-24

2. **Use of Report :** FCC & IC Approval

3. **Test Sample**
   - ○ Description / Model Name : OUTRUSH R / SP85
   - ○ FCC ID : S7A-SP85 / IC : 8154A-SP85

4. **Date of Test :** 2020-10-26 ~ 2020-11-05

5. **Test method used :** FCC Part 15 Subpart C 15.247
   RSS-247 Issue 2(2017-02), RSS-GEN Issue 5(2019-03)

6. **Testing Environment :**
   - ○ Temperature: (25 ± 5) °C, Humidity: Less than 75 % R.H.
   - * Unless specified otherwise in the individual methods, the tests were conducted on ambient conditions.

7. **Test Results :** Refer to the test results

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
This Test Report cannot be reproduced, except in full
This test report is prepared according to the requirements of ISO / IEC 17025.

Affirmation	**Tested by** Jong-Myoung, Shin (signature)	**Technical Manager** Kyung-Taek, Lee (signature)

Nov 27, 2020

NCT CO., LTD. (seal)

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APPENDIX

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1. General Information's

1.1 Test Performed

Laboratory	:	NCT Co., Ltd.
Address	:	211-71, Geumgok-ro, Hwaseong-si, Gyeonggi-do, 18511, Korea
Telephone	:	+82-31-323-6070
Facsimile	:	+82-31-323-6071
FCC Designation No.	:	KR0166
FCC Registration Number	:	409631
IC Site Registration No.	:	25897

2. Information's about Test Item

2.1 Applicant Information

Company name	:	SENA TECHNOLOGIES.Inc
Address	:	19, Heolleung-ro 569-gil, Gangnam-gu, Seoul, Korea
Telephone / Facsimile	:	+82-2-571-8283 / +82-2-573-7710

2.2 Equipment Under Test (EUT) description

Test item particulars	:	OUTRUSH R
Model and/or type reference	:	SP85
Additional model name	:	-
Serial number	:	Identification
Antenna type and gain	:	Chip Antenna(M/N:SENA_003) with Max gain : 0.3 dBi
Date (s) of performance of tests:	:	2020-10-26 ~ 2020-11-05
Date of receipt of test item	:	2020-09-24
EUT condition	:	Pre-production, not damaged
Number of channel	:	40
EUT Power Source	:	DC 3.7 V
Type of Modulation	:	GFSK
FirmWare version	:	1.0
Hardware version	:	1.0
Test software name(version)	:	CSR BlueSuite_BlueTest3(2.6.2)

2.3 Tested Frequency

Test Mode	Test frequency (㎒)		
	Low frequency	Middle frequency	High frequency
BLE	2 402	2 442	2 480

3. Test Report

3.1 Test Summary

Applied	FCC Rule	IC Rule	Test Items	Test Condition	Result
☒	15.203	-	Antenna Requirement	Conducted	C
☒	15.247(a)	RSS-247 (5.2)	6 ㏈ Bandwidth		C
☒	-	RSS GEN (6.7)	Occupied Bandwidth (99%)		C
☒	15.247(b)	RSS-247 (5.4)	Maximum Peak Output Power		C
☒	15.247(e)	RSS-247 (5.2)	Peak Power Spectral Density		C
☒	15.247(d)	RSS-247 (5.5)	Conducted Spurious Emission		C
☒	15.247(d) 15.205 & 15.209	RSS-247 (5.5) RSS-GEN (8.9 & 8.10)	Radiated Spurious Emission	Radiated	C
☒	15.207	RSS-GEN (8.8)	Conducted Emissions	AC Line Conducted	C

Note 1: C=Complies NC=Not Complies NT=Not Tested NA=Not Applicable

The sample was tested according to the following specification: ANSI C63.10:2013.

Compliance was determined by specification limits of the applicable standard according to customer requirements.

3.2 Test Report Version

Test Report No.	Date	Description
NW2011-F008	2020-11-27	Initial issue

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3.3 Transmitter Requirements

3.3.1 Antenna Requirement

Accoding to §15.203 An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

Accoding to §15.247(b)(4) e conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.3.1.1 Result

Complies
(The transmitter has a Chip Antenna. The directional peak gain of the antenna is 0.3 dBi.)

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3.3.2 6 ㏈ Bandwidth

3.3.2.1 Test Setup

Refer to the APPENDIX I.

3.3.2.2 Limit

The minimum permissible 6 ㏈ bandwidth is 500 ㎑.

3.3.2.3 Test Procedure

The bandwidth at 6 ㏈ down from the highest in-band spectral density is measured with a spectrum analyzer connected to the EUT's antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

1. Set resolution bandwidth (RBW) = 100 ㎑
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = Max Hold.
5. Sweep = Auto
6. Allow the trace to stabilize.
7. Option 1 - Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 ㏈ relative to the maximum level measured in the fundamental emission.
   Option 2 - The automatic bandwidth measurement capability of an instrument may be employed using the X ㏈ bandwidth mode with X set to 6 ㏈, if the functionality described above (i.e., RBW = 100 ㎑, VBW ≥ 3 x RBW, peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 ㏈.

3.3.2.4 Test Result

Test Mode	Test Frequency	6 ㏈ Bandwidth (㎒)	Occupied Bandwidth (㎒)
BLE	Low	0.693	1.047
	Middle	0.690	1.044
	High	0.687	1.047

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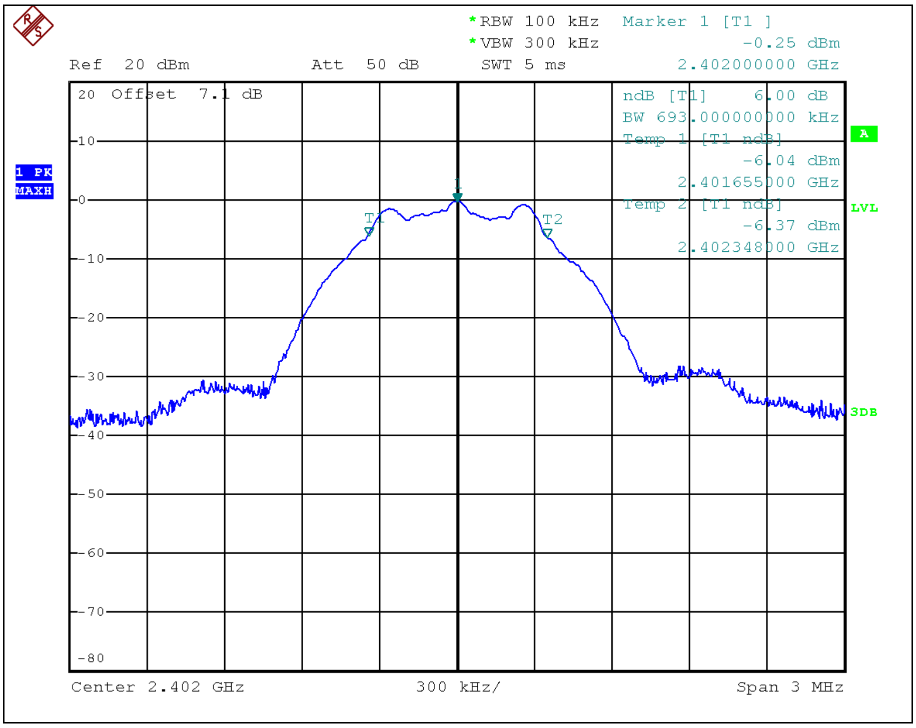
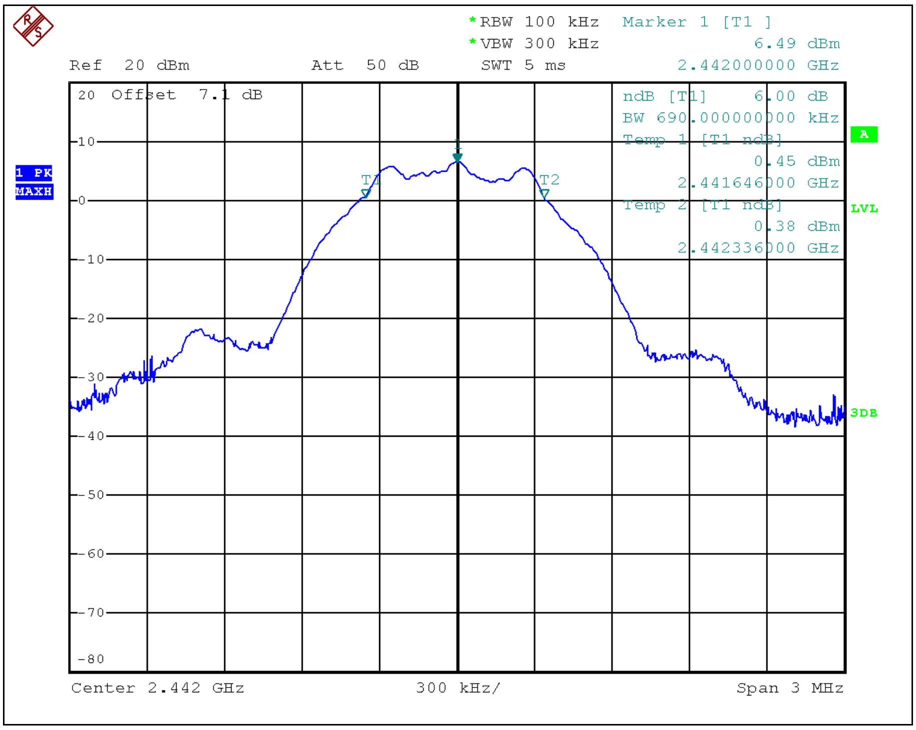
3.3.2.5 Test Plot

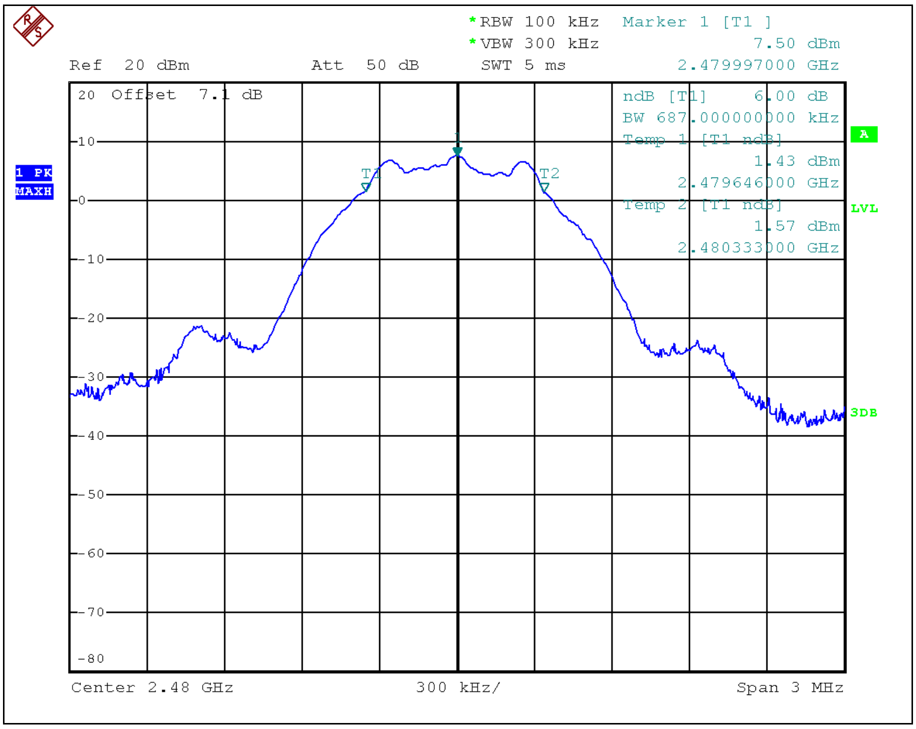
BLE _ Low frequency **6 dB Bandwidth**



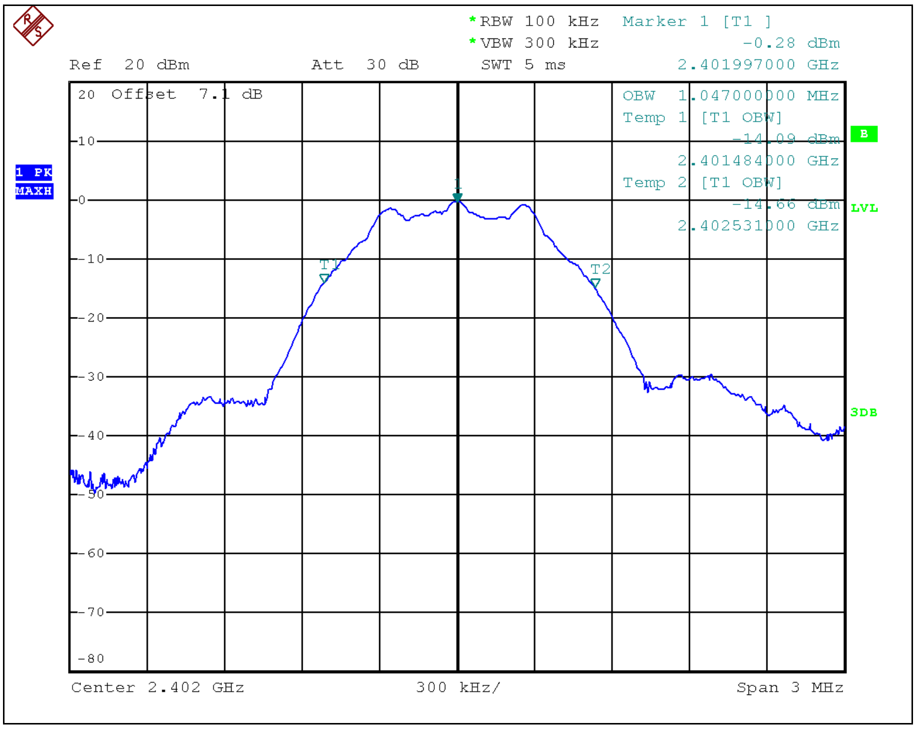
BLE _ Middle frequency **6 dB Bandwidth**



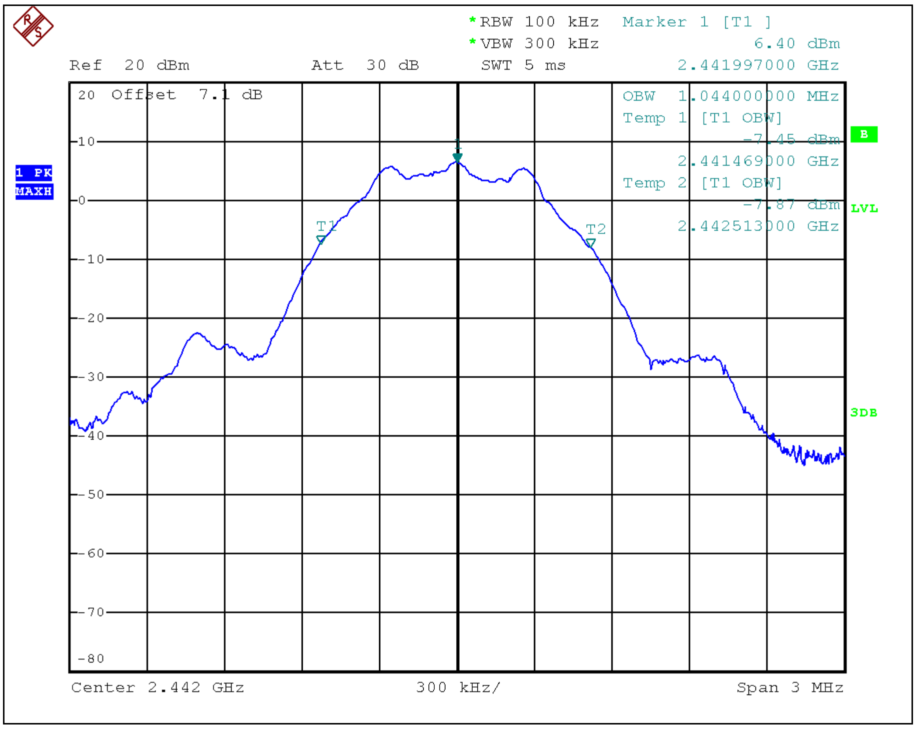
BLE _ High frequency 6 dB Bandwidth



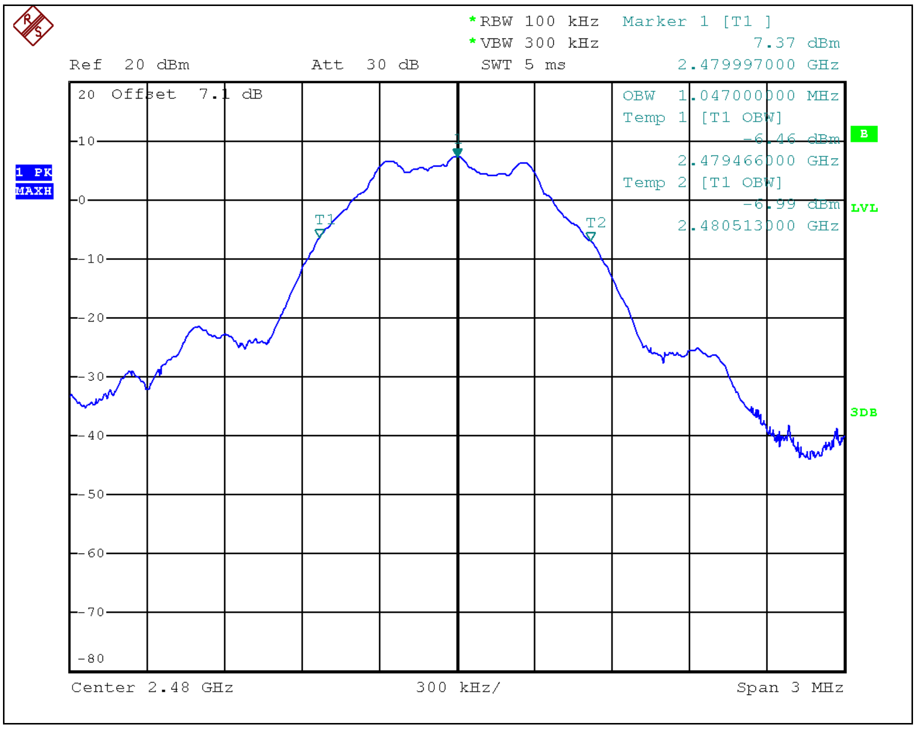
BLE _ Low frequency Occupied Bandwidth



BLE _ Middle frequency Occupied Bandwidth



BLE _ High frequency Occupied Bandwidth



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3.3.3 Maximum Peak Output Power

3.3.3.1 Test Setup

Refer to the APPENDIX I.

3.3.3.2 Limit

The maximum permissible conducted output power is 1 Watt.

3.3.3.3 Test Procedure

A transmitter antenna terminal of EUT is connected to the input of a spectrum analyzer.
Measurement is made while the EUT is operating in transmission mode at the appropriate frequencies.

1. Set the RBW ≥ DTS bandwidth
2. Set VBW ≥ 3 x RBW
3. Set span ≥ 3 x RBW.
4. Sweep time = auto couple
5. Detector = peak
6. Trace mode = max hold
7. Allow trace to fully stabilize
8. Use peak search function to determine the peak amplitude level.

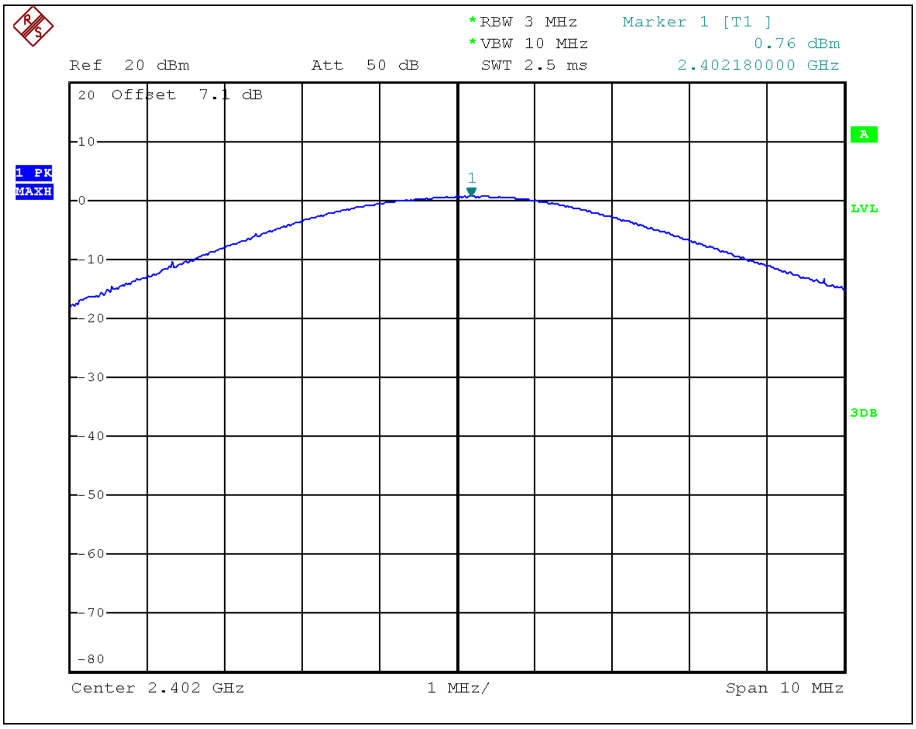
3.3.3.4 Test Result

Test Mode	Test Frequency	Peak Output Power		Frame Average Power	
		dBm	mW	dBm	mW
BLE	Low	0.76	1.19	-0.67	0.86
	Middle	7.16	5.20	6.09	4.06
	High	8.02	6.34	5.53	3.57

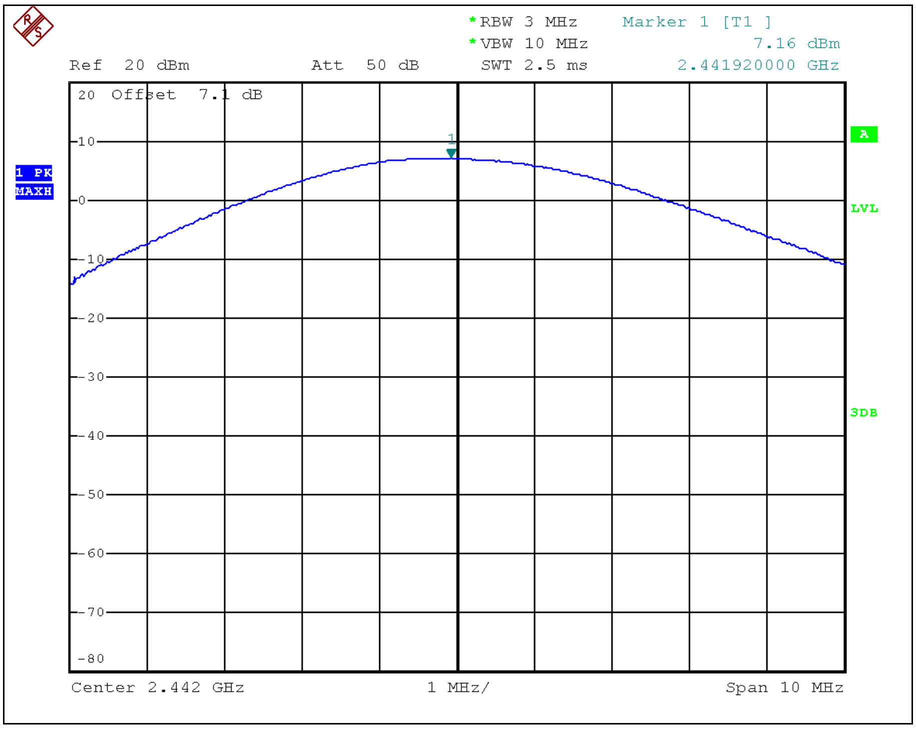
Note1: Frame Average Power was tested using an average power meter for reference only.

3.3.3.5 Test Plot

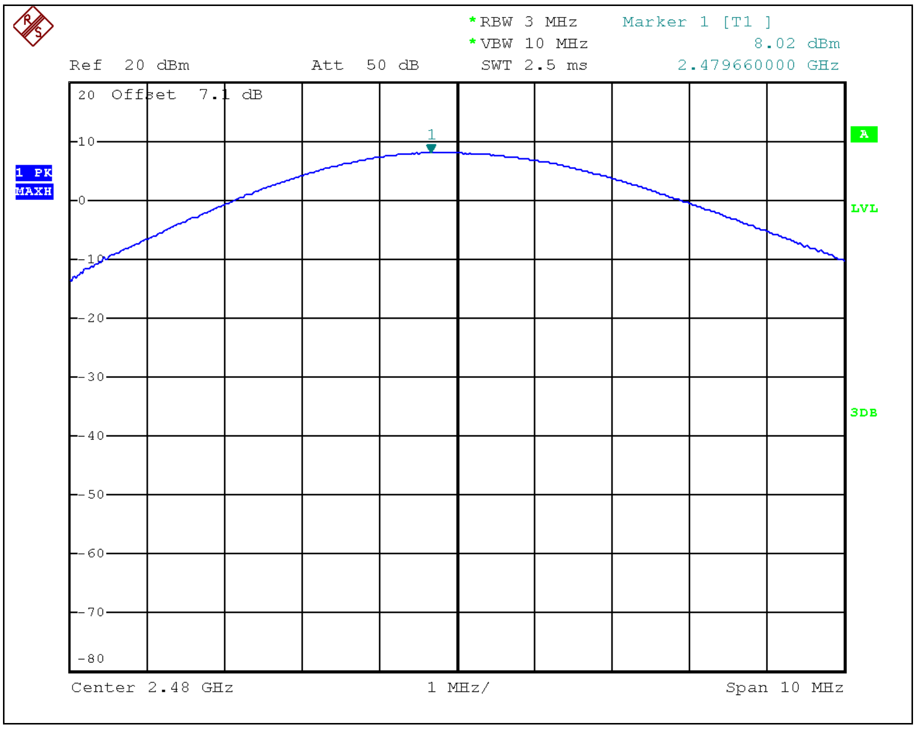
BLE _ Low frequency **Maximum Peak Output Power**



BLE _ Middle frequency **Maximum Peak Output Power**



BLE _ High frequency **Maximum Peak Output Power**



3.3.4 Peak Power Spectral Density

3.3.4.1 Test Setup

Refer to the APPENDIX I.

3.3.4.2 Limit

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 ㏈m in any 3 ㎑ band during any time interval of continuous transmission

3.3.4.3 Test Procedure

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies.

(ANSI C63.10-2013 _ Section 11.10.2 - Method PKPSD)
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW : 3 ㎑ ≤ RBW ≤ 100 ㎑.
4. Set the VBW ≥ 3 x RBW.
5. Detector = Peak.
6. Sweep time = Auto
7. Trace mode = Max Hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 ㎑) and repeat.

3.3.4.4 Test Result

Test Mode	Test Frequency	Peak Power Spectral Density (㏈m)
BLE	Low	-16.29
	Middle	-9.40
	High	-8.40

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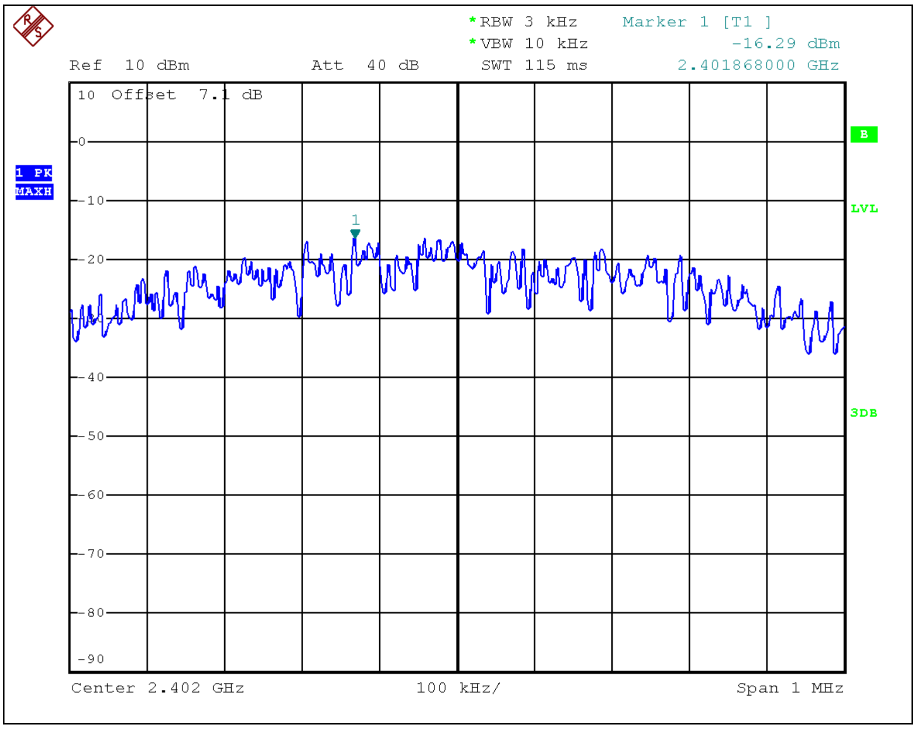
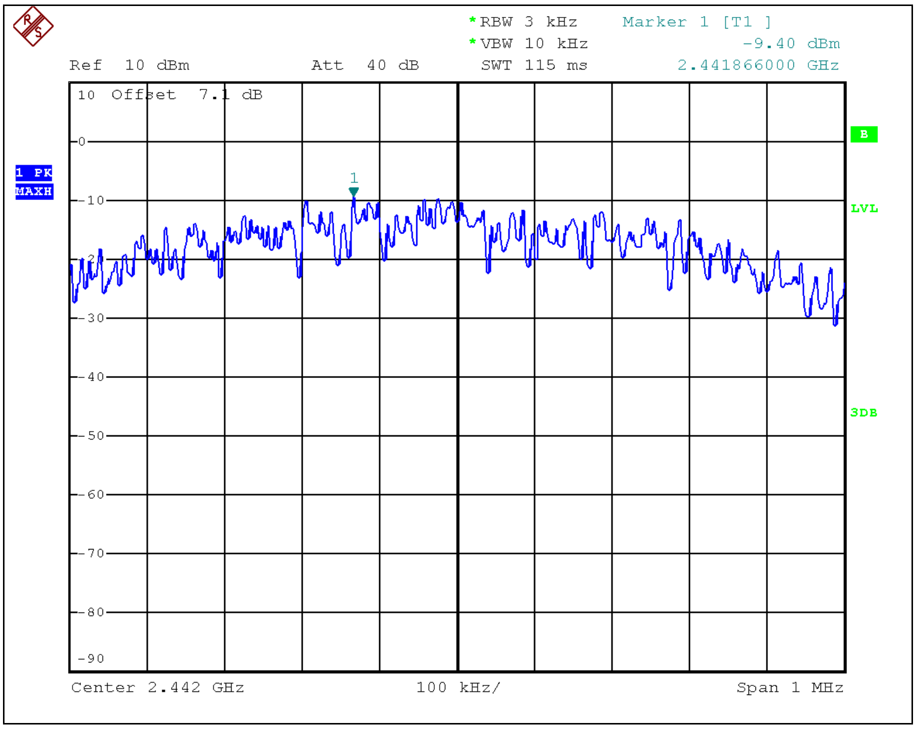
3.3.4.5 Test Plot

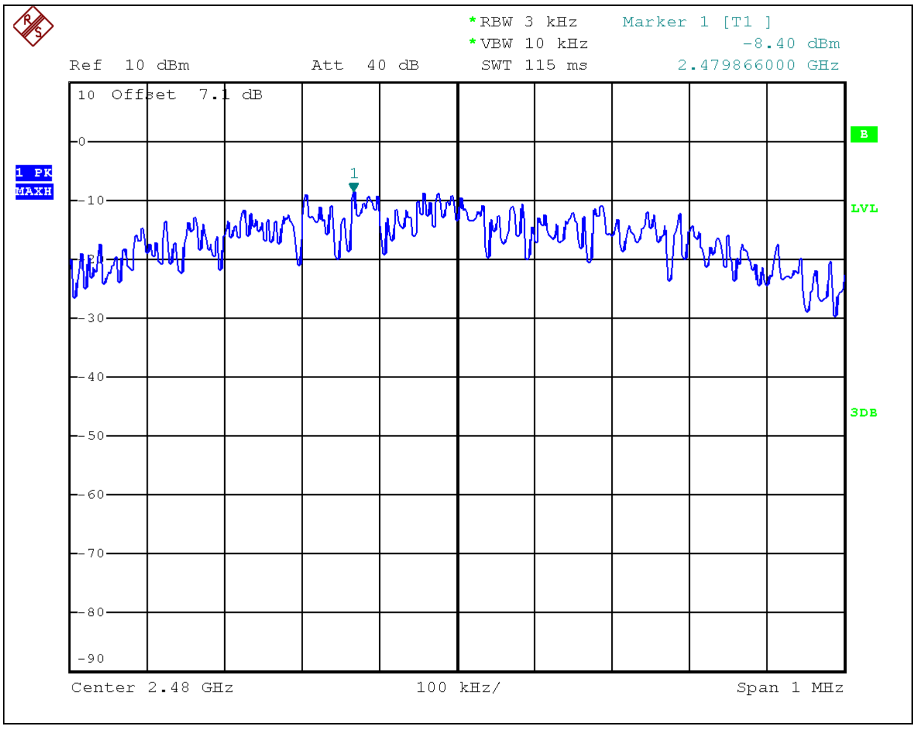
BLE _ Low frequency **Peak Power Spectral Density**



BLE _ Middle frequency **Peak Power Spectral Density**



BLE _ High frequency Peak Power Spectral Density



3.3.5 TX Radiated Spurious Emission and Conducted Spurious Emission

3.3.5.1 Test Setup

Refer to the APPENDIX I.

3.3.5.2 Limit

According to §15.247(d), in any 100 ㎑ bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 ㏈ below that in the 100 ㎑ bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph(b)(3) of this section, the attenuation required under this paragraph shall be 30 ㏈ instead of 20 ㏈. Attenuation below the general limits specified in section §15.209(a) is not required. In addition, radiated emission which in the restricted band, as define in section §15.205(a), must also comply the radiated emission limits specified in section §15.209(a) (see section §15.205(c))

According to § 15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table

Frequency (㎒)	Limit (uV/m)	Measurement Distance (meter)
0.009 ~ 0.490	2400/F (㎑)	300
0.490 ~ 1705	24000/F (㎑)	30
1705 ~ 30.0	30	30
30 ~ 88	100 **	3
88 ~ 216	150 **	3
216 ~ 960	200 **	3
Above 960	500	3

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54 - 72 ㎒, 76 - 88 ㎒, 174 - 216 ㎒ or 470 – 806 ㎒. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

According to § 15.205(a) and (b), only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.009 ~ 0.110	16.42 ~ 16.423	399.90 ~ 410	4.5 ~ 5.15
0.495 ~ 0.505	16.69475 ~ 16.69525	608 ~ 614	5.35 ~ 5.46
2.1735 ~ 2.1905	16.80425 ~ 16.80475	960 ~ 1240	7.25 ~ 7.75
4.125 ~ 4.128	25.5 ~ 25.67	1300 ~ 1427	8.025 ~ 8.5
4.17725 ~ 4.17775	37.5 ~ 38.	1435 ~ 1626.5	9.0 ~ 9.2
4.20725 ~ 4.20775	25 73 ~ 74.6	1645.5 ~ 1646.5	9.3 ~ 9.5
4.17725 ~ 4.17775	74.8 ~ 75.2	1660 ~ 1710	10.6 ~ 12.7
6.215 ~ 6.218	108 ~ 121.94	1718.8 ~ 1722.2	13.25 ~ 13.4
6.26775 ~ 6.26825	149.9 ~ 150.05	2200 ~ 2300	14.47 ~ 14.5
6.31175 ~ 6.31225	156.52475 ~ 156.52525	2310 ~ 2390	15.35 ~ 16.2
8.291 ~ 8.294	156.7 ~ 156.9	2483.5 ~ 2500	17.7 ~ 21.4
8.362 ~ 8.366	162.0125 ~ 167.17	2690 ~ 2900	22.01 ~ 23.12
8.37625 ~ 8.38675	3345.8 ~ 3358	3260 ~ 3267	23.6 ~ 24.0
8.41425 ~ 8.41475	3600 ~ 4400	3332 ~ 3339	31.2 ~ 31.8
12.51975 ~ 12.52025	3345.8 ~ 3358	240 ~ 285	36.43 ~ 36.5
12.57675 ~ 12.57725	3600 ~ 4400	322 ~ 335.4	Above 38.6
13.36 ~ 13.41			

The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 ㎒, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 ㎒, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

3.3.5.3 Test Procedure for Radiated Spurious Emission

1. The EUT is placed on a non-conductive table. For emission measurements at or below 1 ㎓, the table height is 80 cm. For emission measurements above 1 ㎓, the table height is 1.5 m. The table was rotated 360 degrees to determine the position of the highest radiation.

2. During performing radiated emission below 1 ㎓, the EUT was set 3 meters away from the interference receiving antenna, which was mounted on the top of a variable-height antenna tower. During performing radiated emission above 1 ㎓, the EUT was set 1 or 3 meter away from the interference-receiving antenna.

3. For measurements above 1 ㎓ absorbers are placed on the floor between the turn table and the antenna mast in such a way so as to maximize the reduction of reflections. For measurements below 1 ㎓, the absorbers are removed.

4. The antenna is a Broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

5. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the table was turned from 0 degrees to 360 degrees to find the maximum reading.
   (The EUT was pre-tested with three axes (X, Y, Z) and the final test was performed at the worst case.)

6. Repeat above procedures until the measurements for all frequencies are complete.

Measurement Instrument Setting

1. Frequency Range: Below 1 ㎓
   RBW = 100 or 120 ㎑, VBW = 3 x RBW, Detector = Peak or Quasi Peak

2. Frequency Range: Above 1 ㎓

   Peak Measurement
   RBW = 1 ㎒, VBW = 3 ㎒, Detector = Peak, Sweep time = Auto,
   Trace mode = Max Hold until the trace stabilizes

   Average Measurement
   RBW = 1 ㎒, VBW = 3 ㎒, Detector = RMS (Number of points ≥ 2 x Span / RBW),
   Trace Mode = Average (Averaging type = power(i.e. RMS)), Sweep Time = Auto,
   Sweep Count = at least 100 traces

   A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:

   1) If power averaging (RMS) mode was used in step 4, then the applicable correction factor is 10 log(1/x), where x is the duty cycle.
   2) If linear voltage averaging mode was used in step 4, then the applicable correction factor is 20 log(1/x), where x is the duty cycle.
   3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than tuming on and off with the transmit cycle, then no duty cycle correction is required for that emission.

3.3.5.4 Test Procedure for Conducted Spurious Emission

1. The transmitter output was connected to the spectrum analyzer.

2. The reference level of the fundamental frequency was measured with the spectrum analyzer using RBW = 100 ㎑, VBW = 300 ㎑.

3. The conducted spurious emission was tested each ranges were set as below.
   Frequency range: 30 ㎒ ~ 26.5 ㎓
   RBW = 100 ㎑, VBW = 300 ㎑, Sweep Time = Auto, Detector = Peak,
   Trace = Max Hold

   LIMIT LINE = 20 ㏈ below of the reference level of above measurement procedure Step 2. (RBW = 100 ㎑, VBW = 300 ㎑)

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3.3.5.5 Test Result

9 ㎑ ~ 25 ㎓ Data

- Low frequency

Frequency (㎒)	Reading (㏈ uV/m) AV	Reading (㏈ uV/m) Peak	Pol.	Factor (㏈)	DCCF (㏈)	Limits (㏈ uV/m) AV	Limits (㏈ uV/m) Peak	Result (㏈ uV/m) AV	Result (㏈ uV/m) Peak	Margin (㏈) AV	Margin (㏈) Peak
4 804.00	41.92	51.55	H	-9.67	2.12	54.0	74.0	34.4	41.9	19.6	32.1

- Middle frequency

Frequency (㎒)	Reading (㏈ uV/m) AV	Reading (㏈ uV/m) Peak	Pol.	Factor (㏈)	DCCF (㏈)	Limits (㏈ uV/m) AV	Limits (㏈ uV/m) Peak	Result (㏈ uV/m) AV	Result (㏈ uV/m) Peak	Margin (㏈) AV	Margin (㏈) Peak
4 884.00	58.37	63.61	H	-9.58	2.12	54.0	74.0	50.9	54.0	3.1	20.0
7 326.00	40.27	50.01	V	-0.46	2.12	54.0	74.0	41.9	49.6	12.1	24.5
9 768.00	43.66	52.22	V	0.20	2.12	54.0	74.0	46.0	52.4	8.0	21.6

- High frequency

Frequency (㎒)	Reading (㏈ uV/m) AV	Reading (㏈ uV/m) Peak	Pol.	Factor (㏈)	DCCF (㏈)	Limits (㏈ uV/m) AV	Limits (㏈ uV/m) Peak	Result (㏈ uV/m) AV	Result (㏈ uV/m) Peak	Margin (㏈) AV	Margin (㏈) Peak
2 483.50	34.97	42.78	H	14.15	2.12	54.0	74.0	51.2	56.9	2.8	17.1
4 960.00	55.68	61.10	H	-9.47	2.12	54.0	74.0	48.3	51.6	5.7	22.4
7 440.00	38.23	48.32	V	-0.31	2.12	54.0	74.0	40.0	48.0	14.0	26.0
9 920.00	43.80	52.48	V	0.89	2.12	54.0	74.0	46.8	53.4	7.2	20.6

Note 1: The radiated emissions were investigated 9 ㎑ to 25 ㎓. And no other spurious and harmonic emissions were found above listed frequencies.
Note 2: DCCF(Duty Cycle Correction Factor)
- T_{on} = 0.400 ms / T_{off} = 0.252 ms
- Duty Cycle = T_{on} / (T_{on}+T_{off}) = 0.400 / (0.400+0.252) = 0.613
- DCF = 10 x log(1/Duty Cycle) ㏈ = 10 x log(1/0.613) ㏈ = 2.12 ㏈

Note 3: Sample Calculation.
Margin = Limit – Result / Peak Result = Peak Reading + TF / Average Result = Average Reading + TF + DCCF
TF = Ant factor + Cable Loss + Filter Loss – Amp Gain

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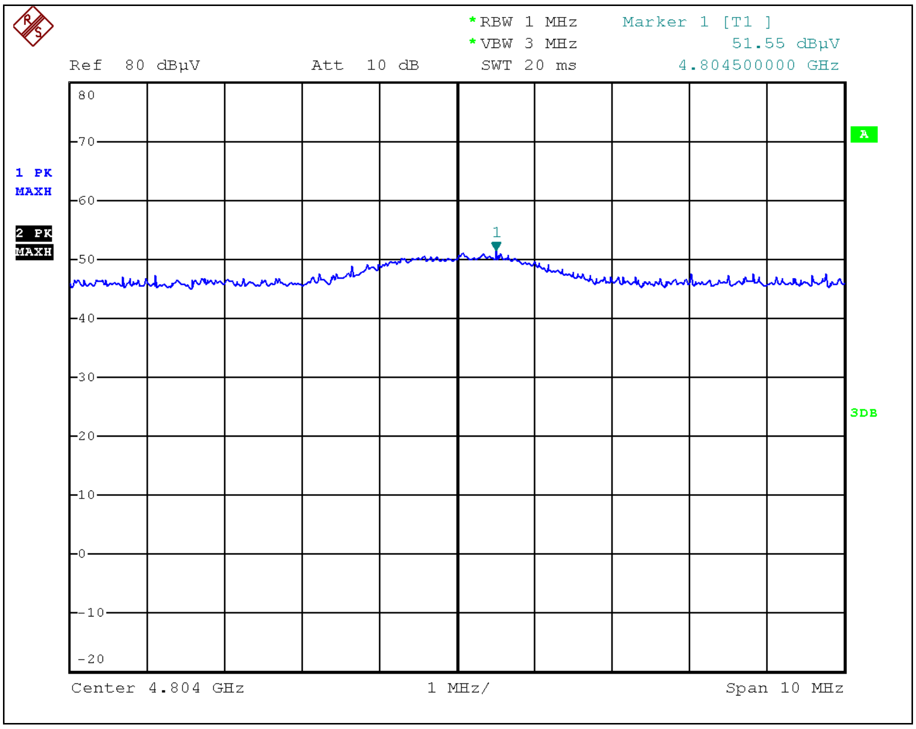
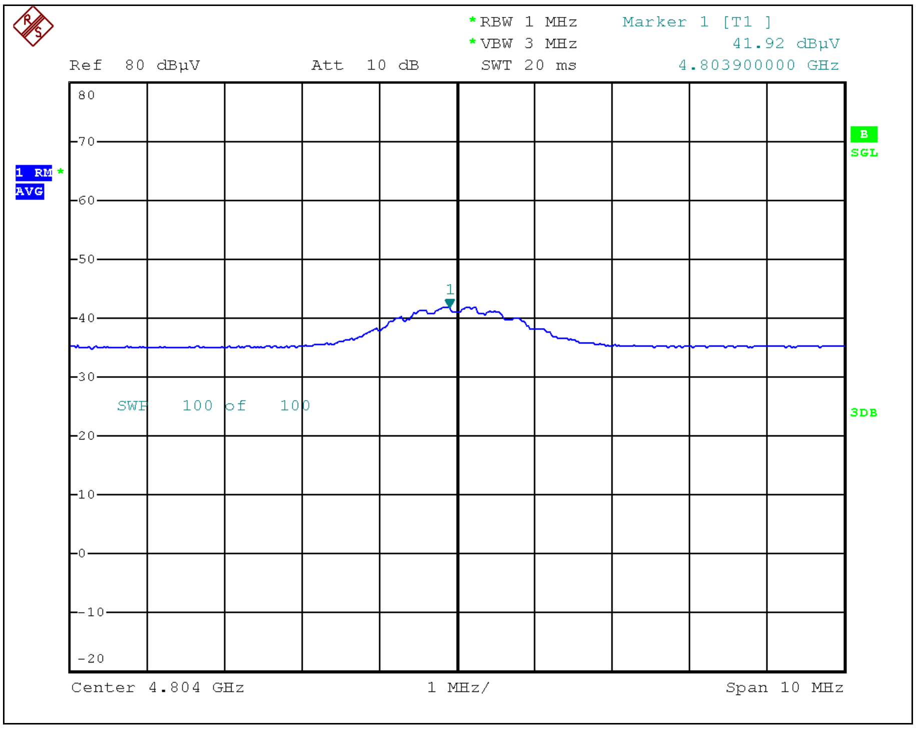
3.3.5.6 Test Plot for Radiated Spurious Emission

- **BLE _ Low frequency**

Spurious – Peak

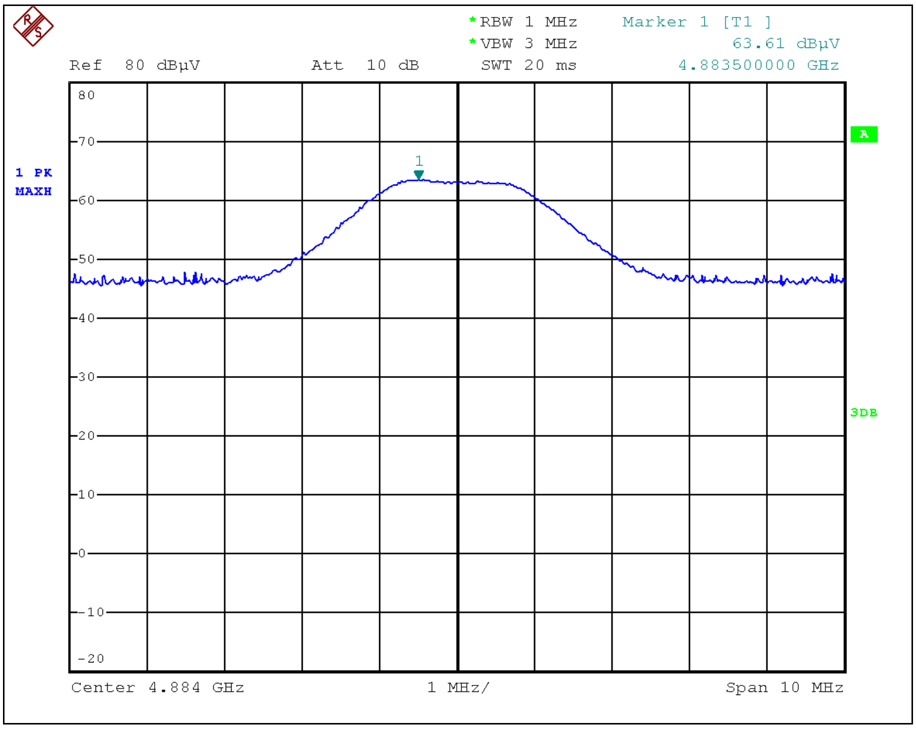


Spurious – Average

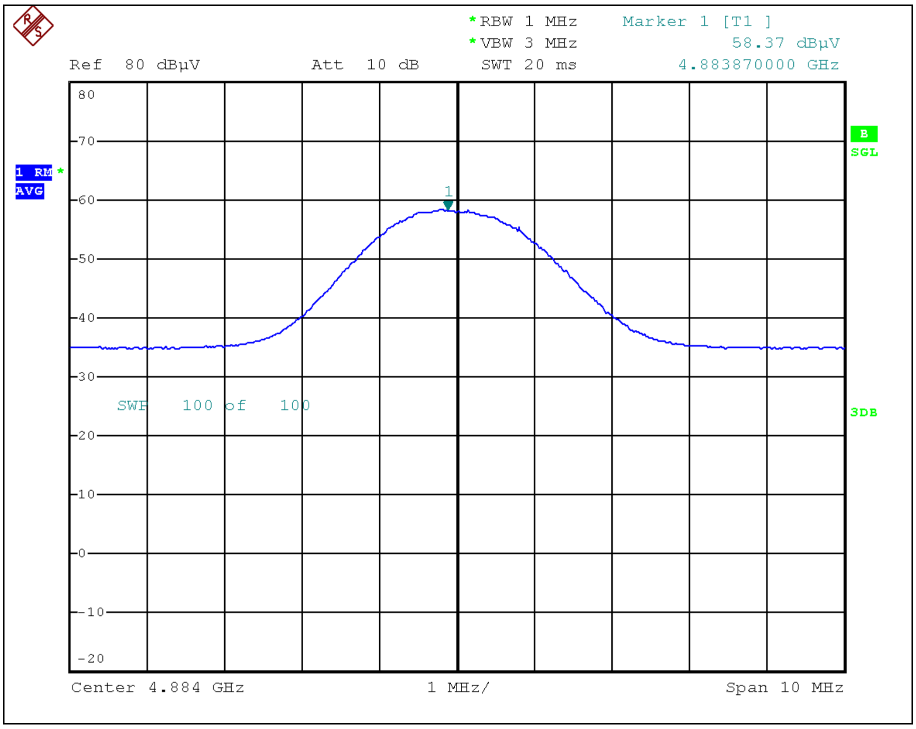


- **BLE _ Middle frequency**

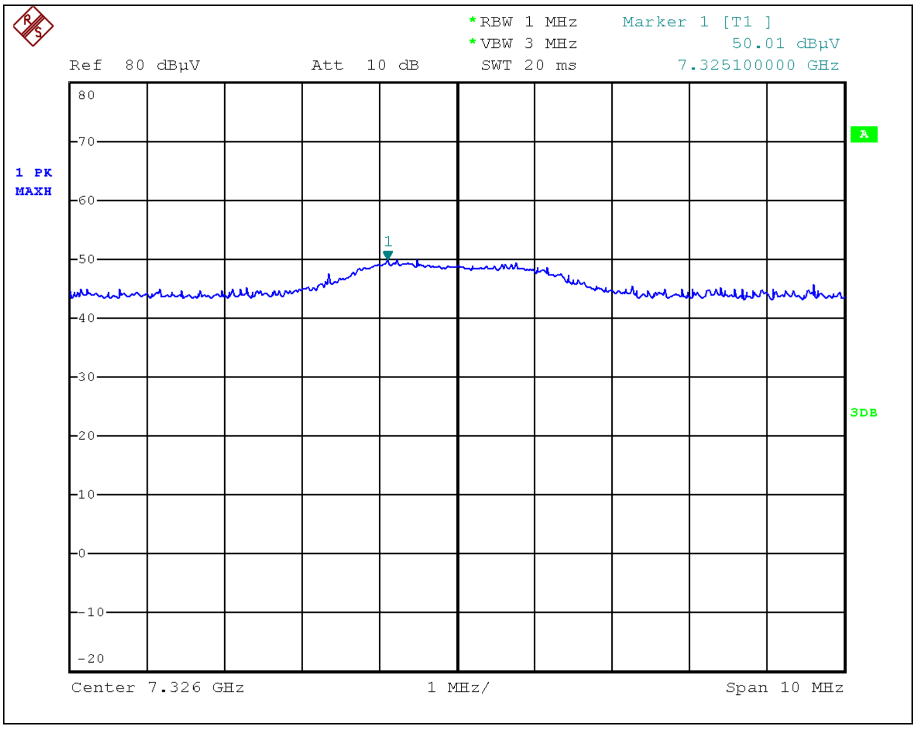
Spurious – Peak



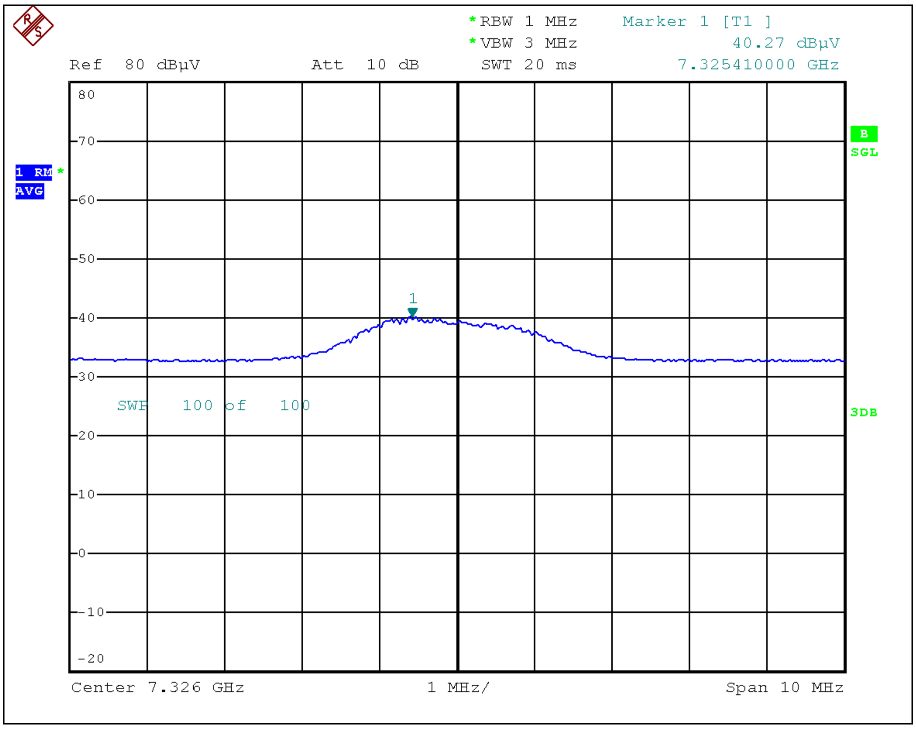
Spurious – Average



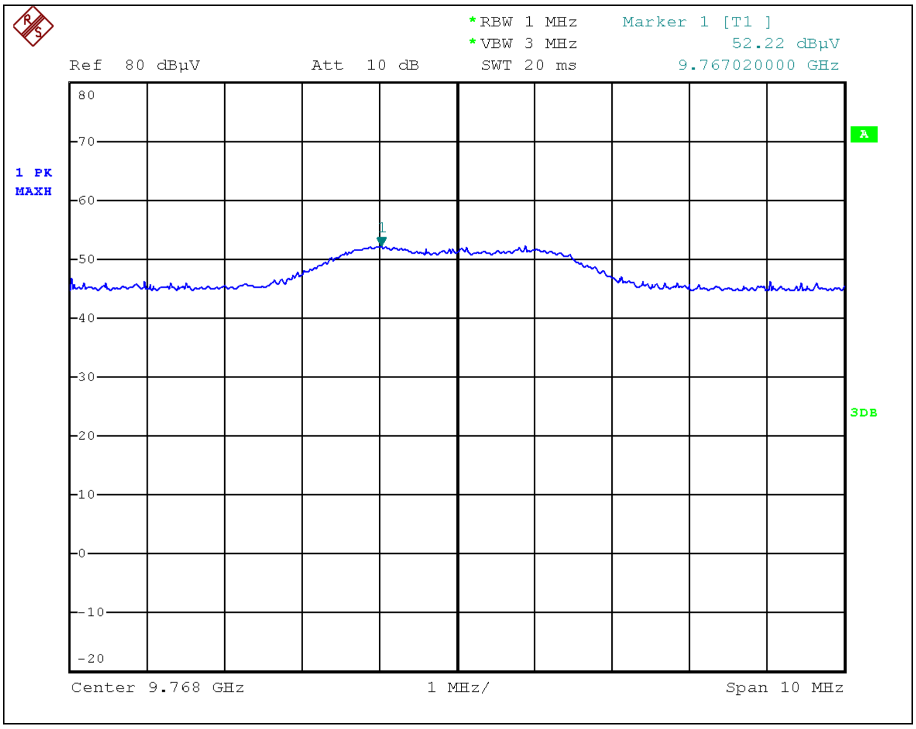
Spurious – Peak



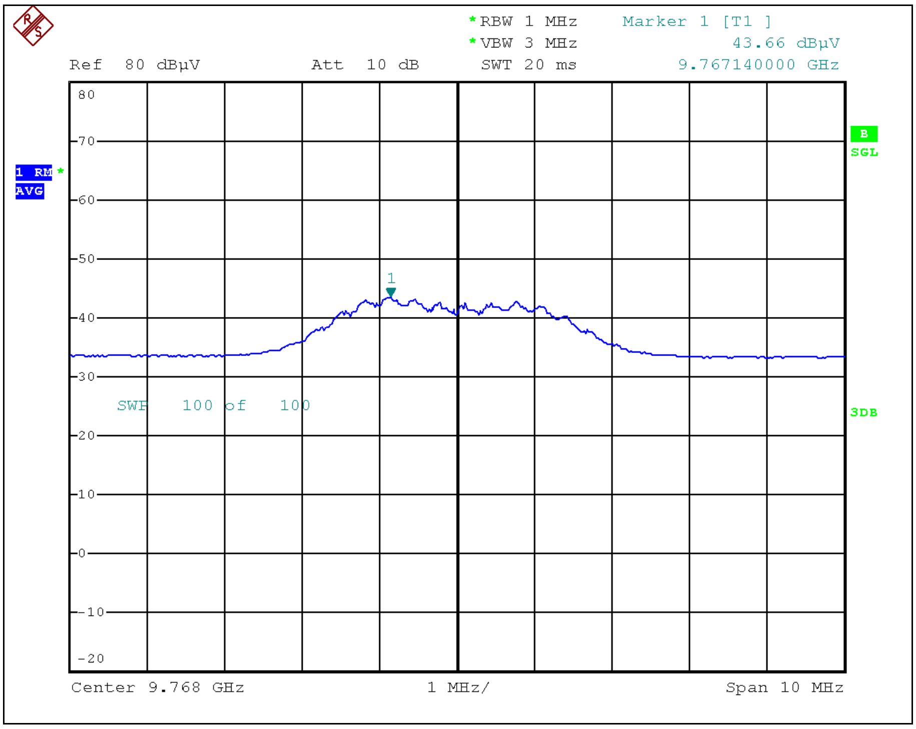
Spurious – Average



Spurious – Peak



Spurious – Average



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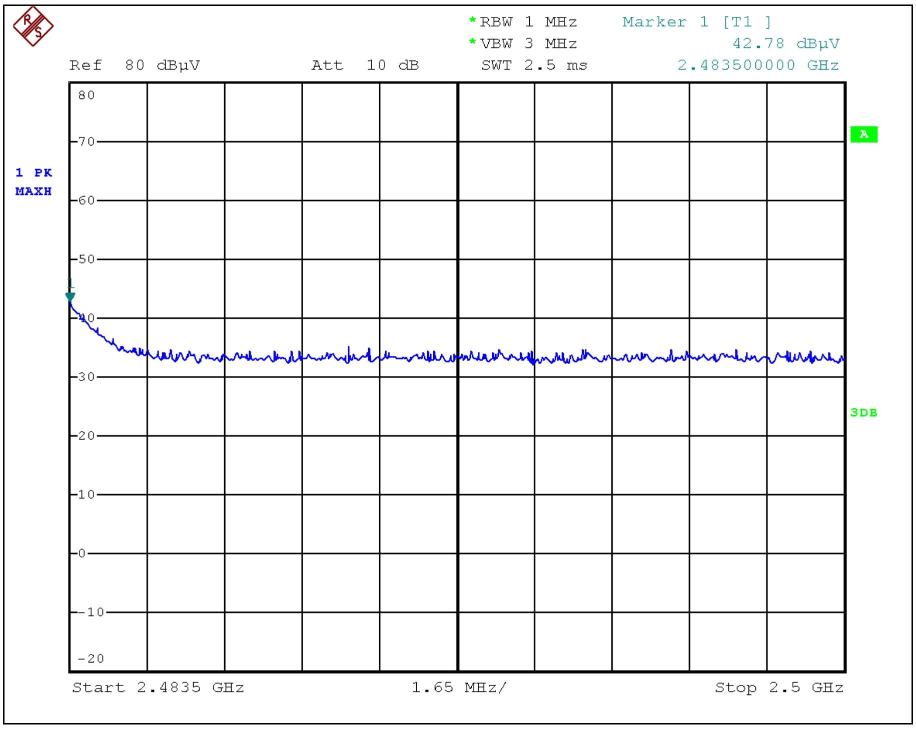
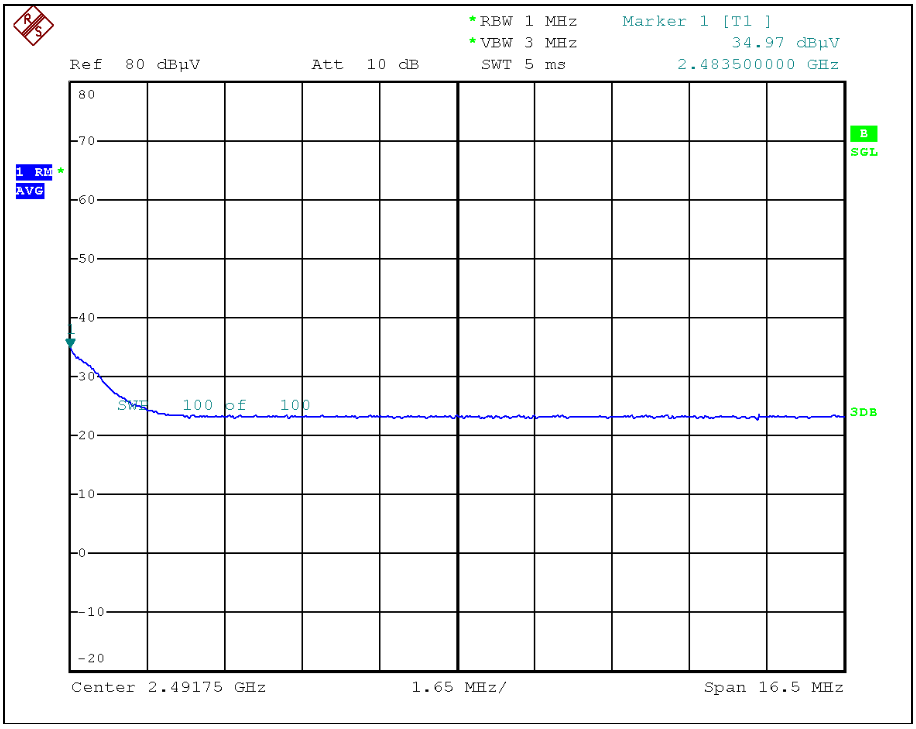
- **BLE _ High frequency**

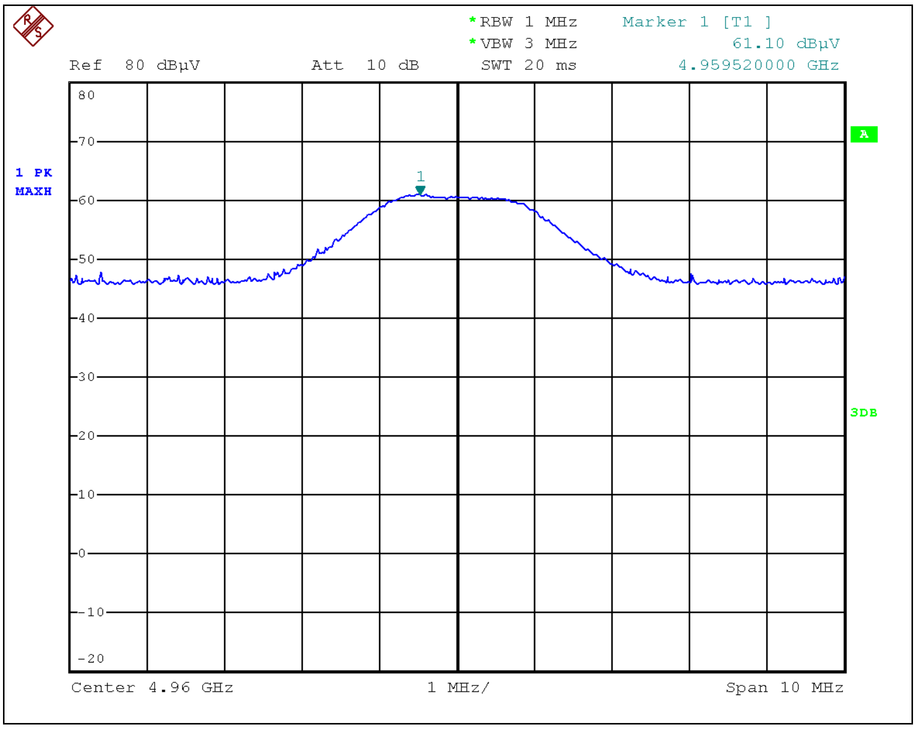
Restricted Band – Peak



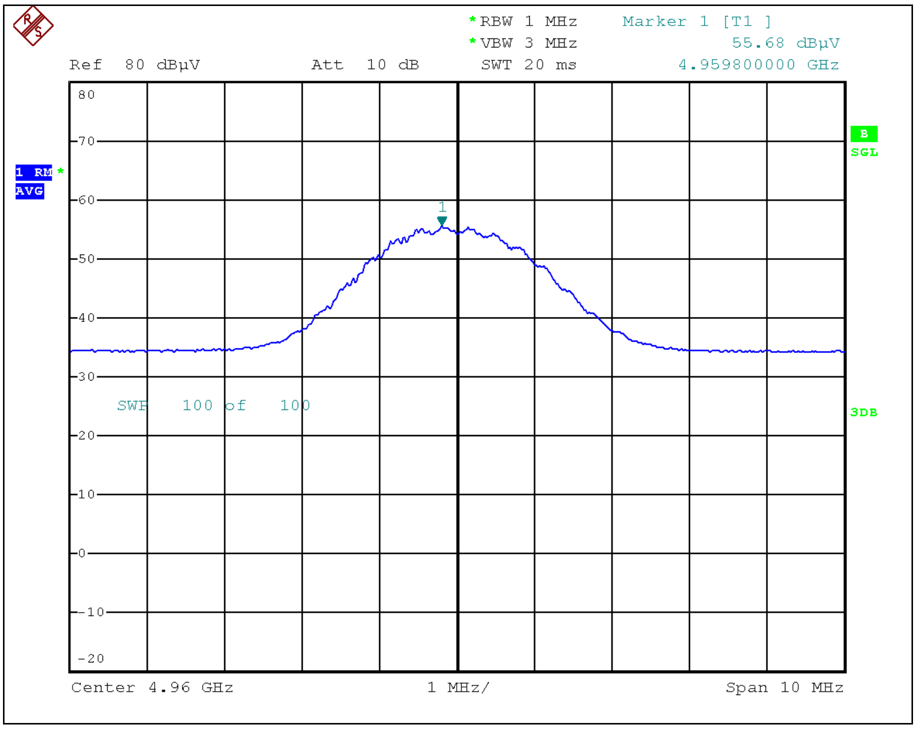
Restricted Band – Average



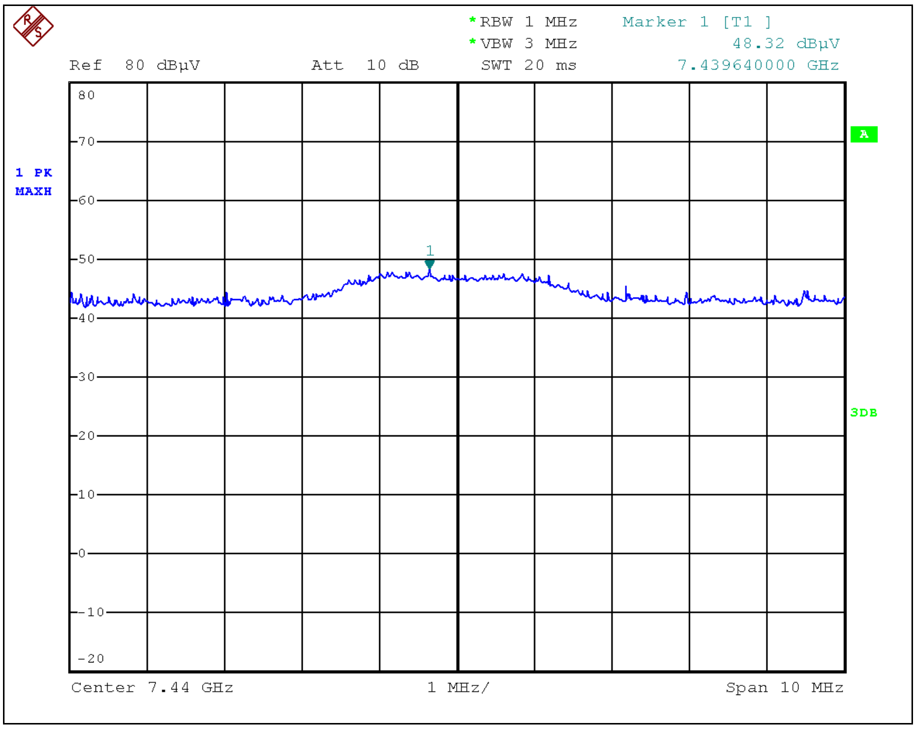
Spurious – Peak



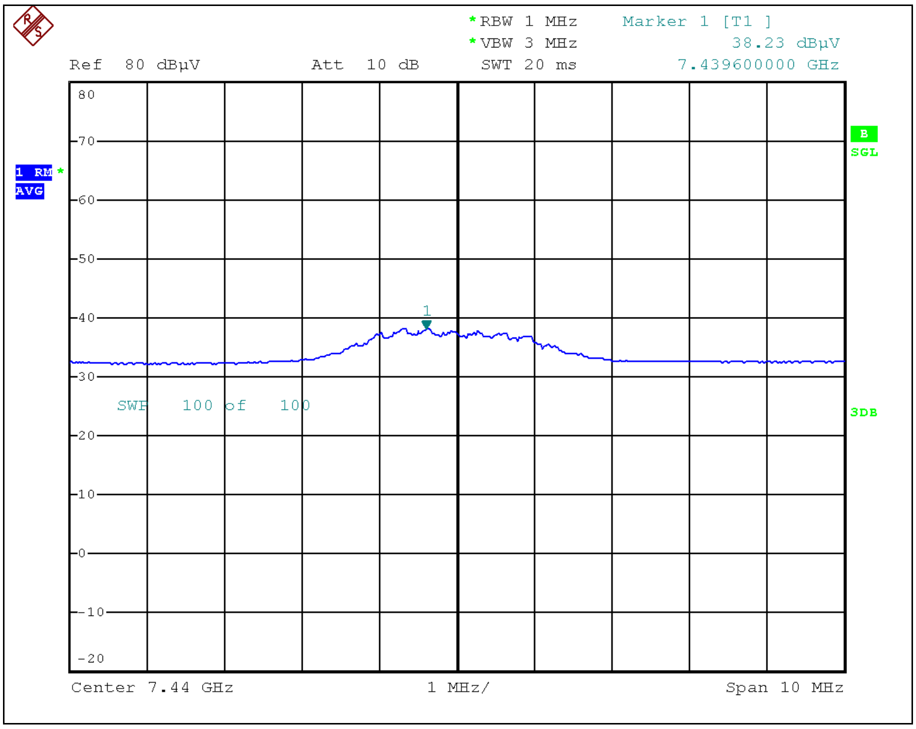
Spurious – Average



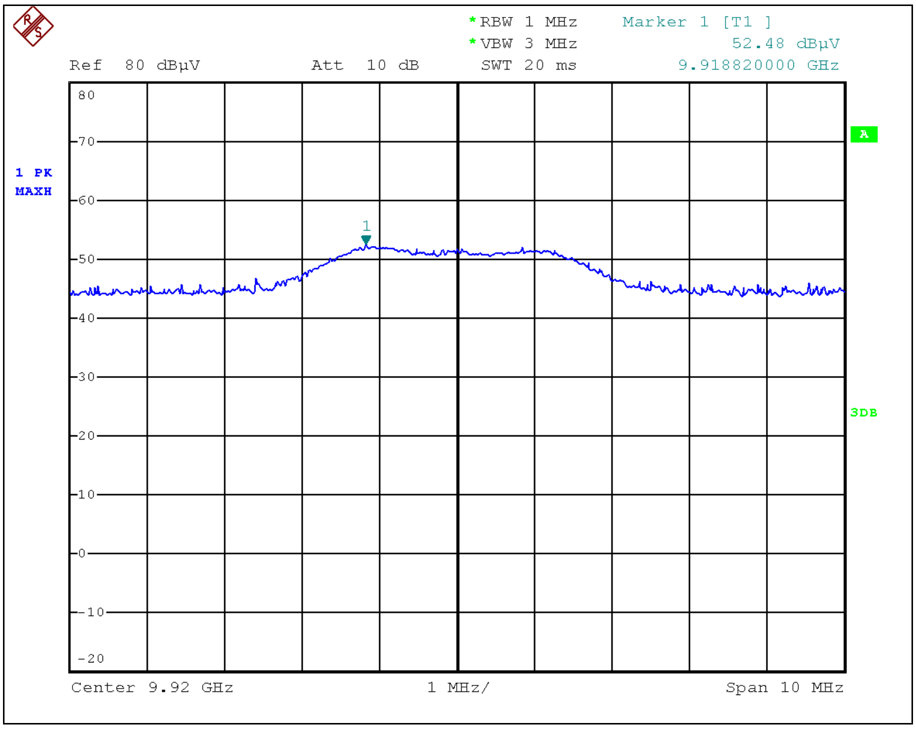
Spurious – Peak



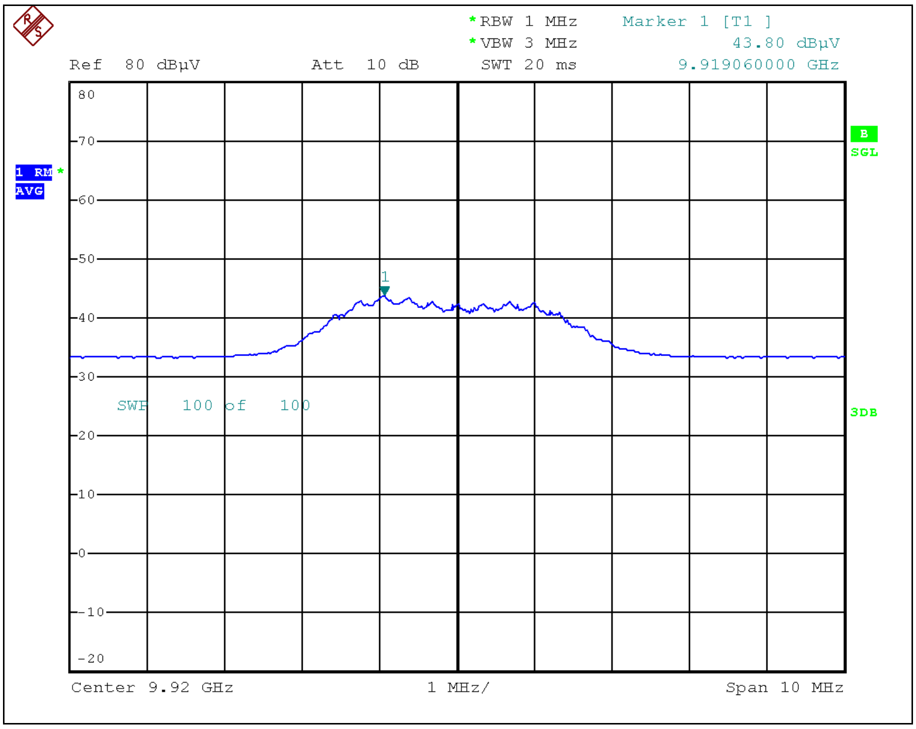
Spurious – Average



Spurious – Peak



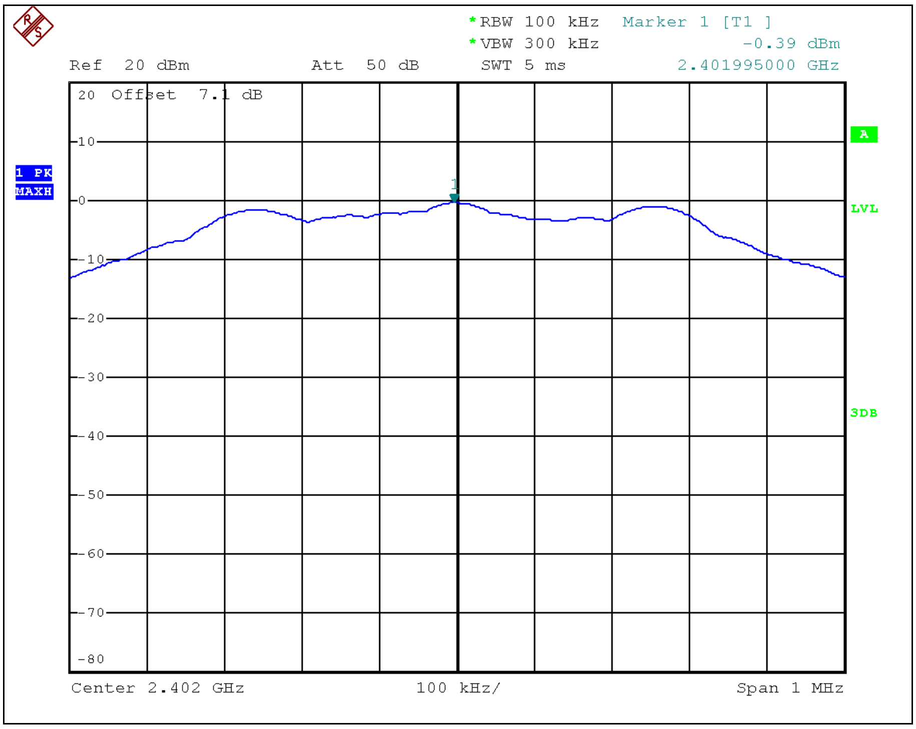
Spurious – Average



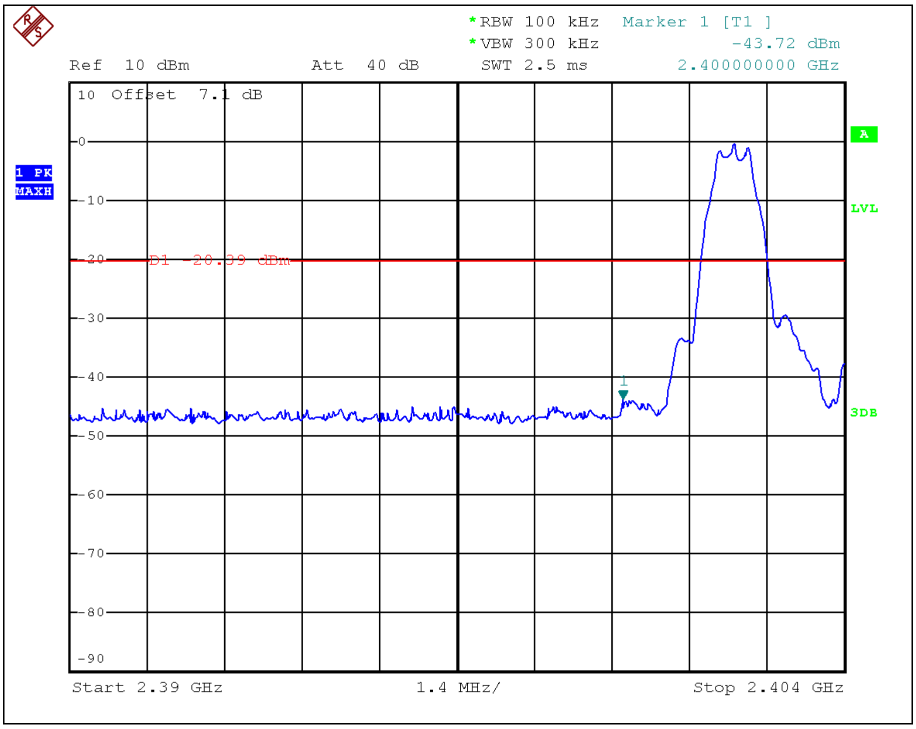
3.3.5.7 Test Plot for Conducted Spurious Emission

- **BLE _ Low frequency**

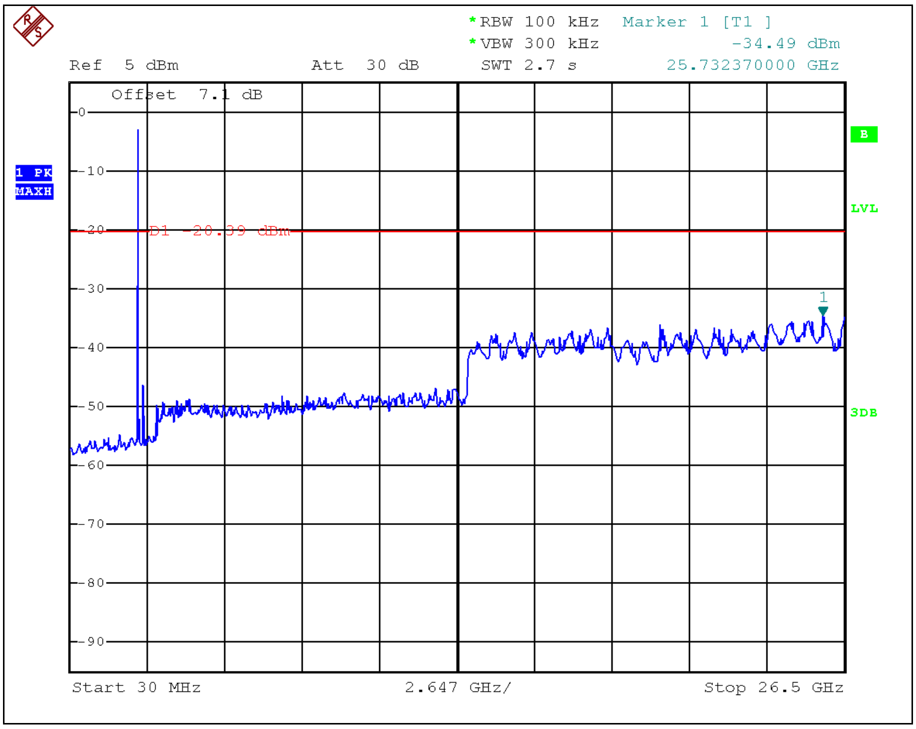
Reference



Bandedge



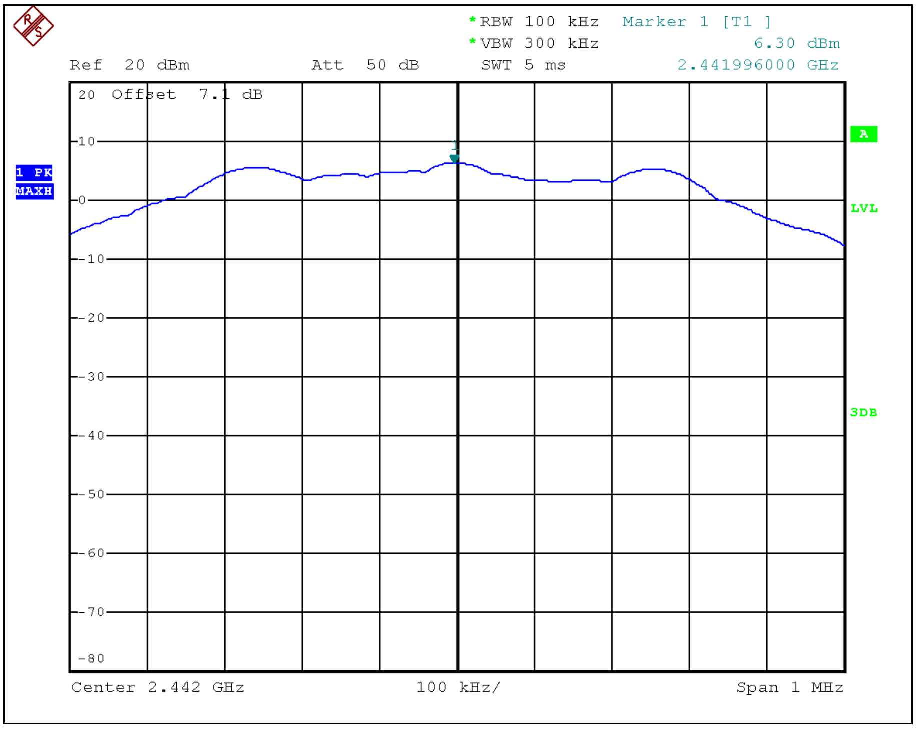
Spurious



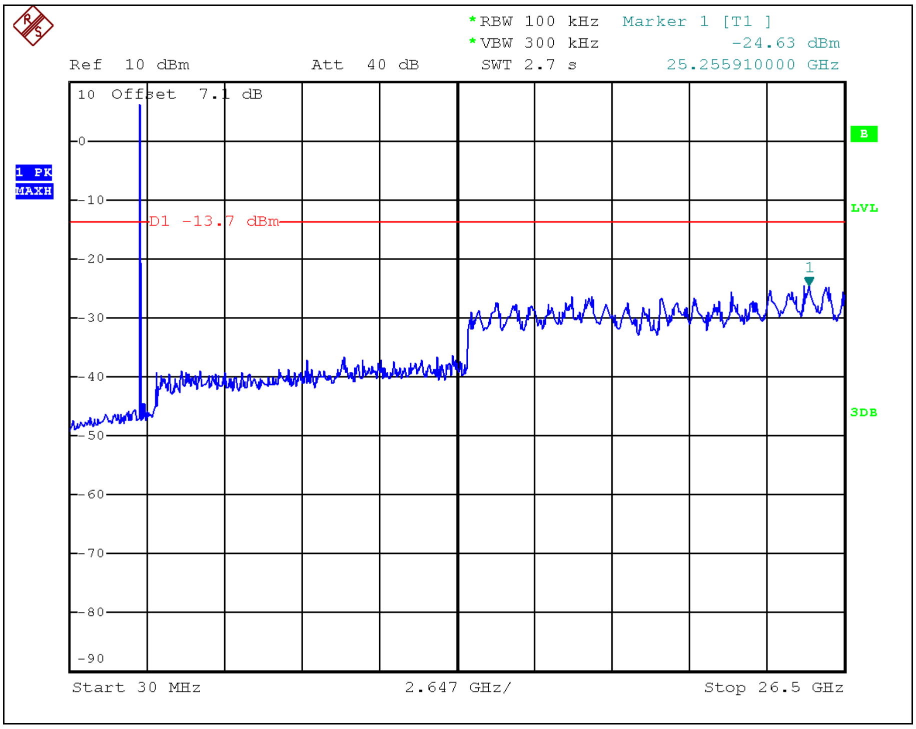
*RBW 100 kHz
*VBW 300 kHz
Marker 1 [T1]
-34.49 dBm
25.732370000 GHz
Ref 5 dBm
Att 30 dB
SWT 2.7 s
Offset 7.1 dB
1 PK
MAXH
D1 -20.39 dBm
LVL
3DB
Start 30 MHz
2.647 GHz/
Stop 26.5 GHz

- **BLE _ Middle frequency**

Reference

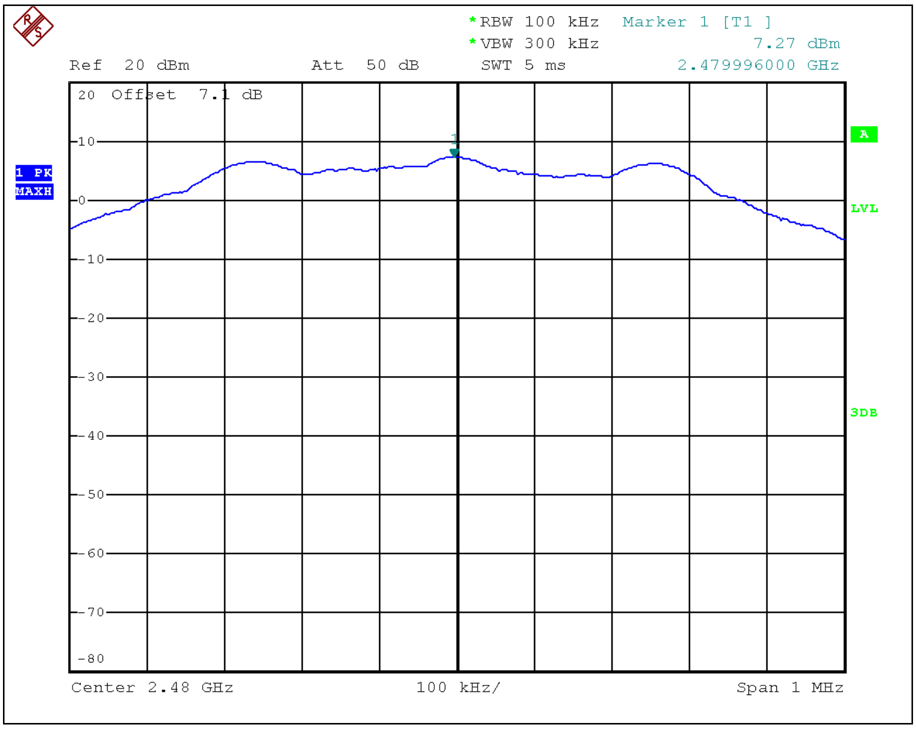


Spurious

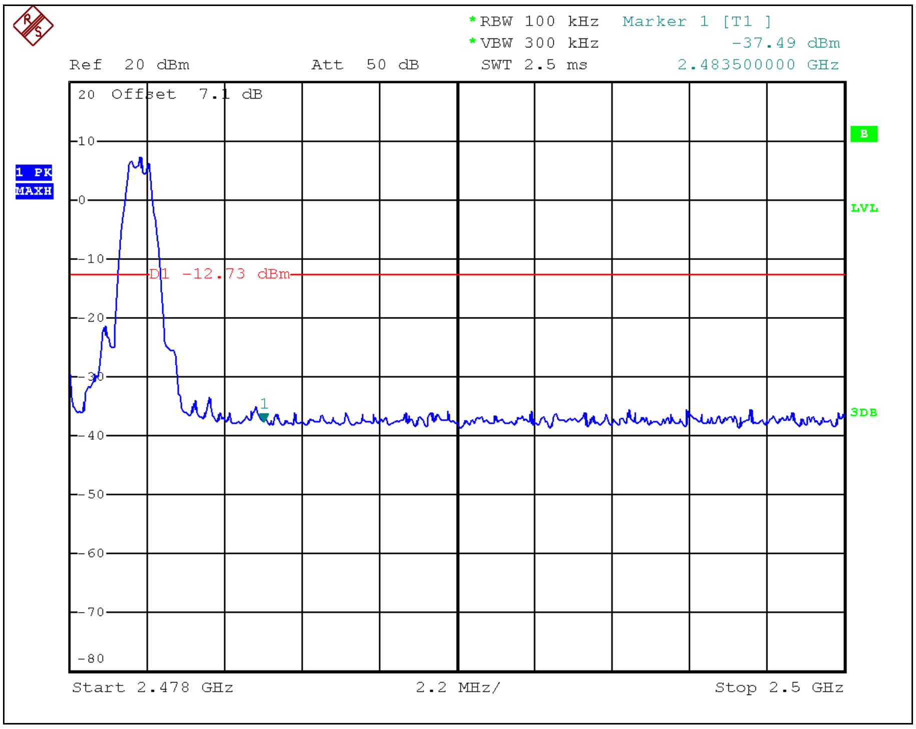


- **BLE _ High frequency**

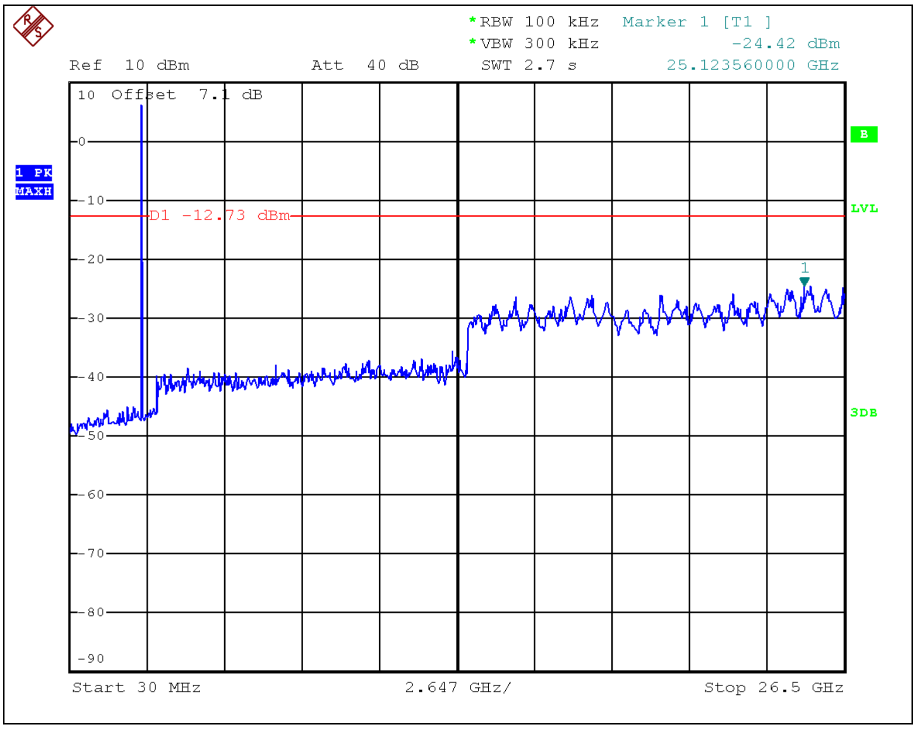
Reference



Bandedge



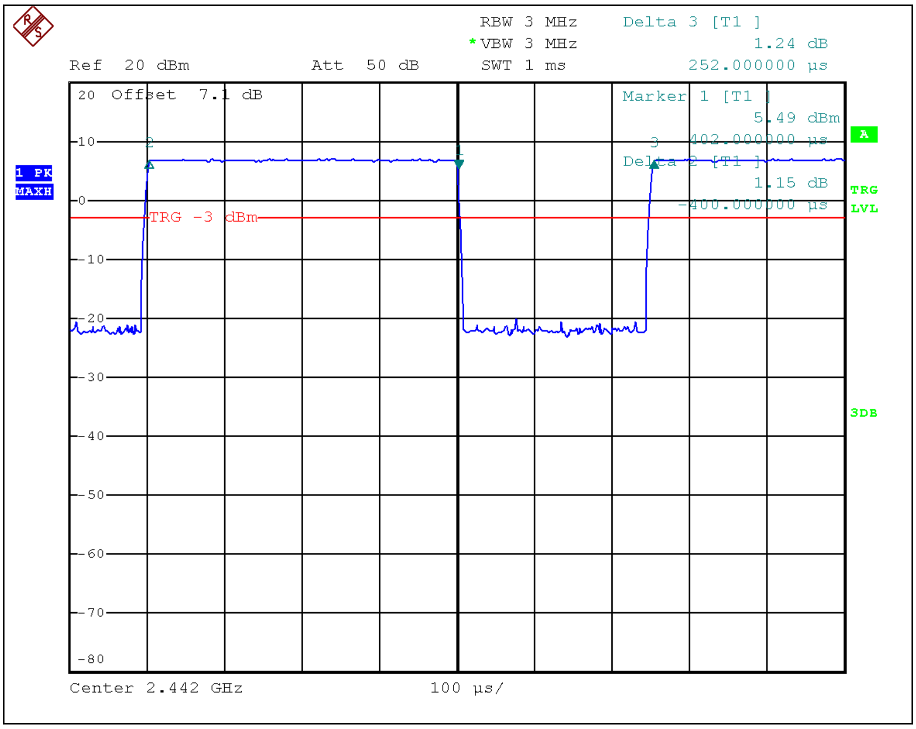
Spurious



*RBW 100 kHz
Marker 1 [T1]
*VBW 300 kHz
-24.42 dBm
Ref 10 dBm
Att 40 dB
SWT 2.7 s
25.123560000 GHz
10 Offset 7.1 dB
1 PK
MAXH
B
LVL
D1 -12.73 dBm
3DB
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
Start 30 MHz
2.647 GHz/
Stop 26.5 GHz

3.3.5.8 Test Plot for Duty Cycle

BLE



3.3.6 Conducted Emission

3.3.6.1 Test Setup

See test photographs for the actual connections between EUT and support equipment.

3.3.6.2 Limit

According to §15.207(a) for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 ㎑ to 30 ㎒, shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network (LISN).
Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency Range (㎒)	Conducted Limit (dBuV)	
	Quasi-Peak	Average
0.15 ~ 0.5	66 to 56 *	56 to 46 *
0.5 ~ 5	56	46
5 ~ 30	60	50

* Decreases with the logarithm of the frequency

3.3.6.3 Test Procedure

Conducted emissions from the EUT were measured according to the ANSI C63.10.

1. The test procedure is performed in a 6.5 m × 3.5 m × 3.5 m (L × W × H) shielded room. The EUT along with its peripherals were placed on a 1.0 m (W) × 1.5 m (L) and 0.8 m in height wooden table and the EUT was adjusted to maintain a 0.4 meter space from a vertical reference plane.
2. The EUT was connected to power mains through a line impedance stabilization network (LISN) which provides 50 ohm coupling impedance for measuring instrument and the chassis ground was bounded to the horizontal ground plane of shielded room.
3. All peripherals were connected to the second LISN and the chassis ground also bounded to the horizontal ground plane of shielded room.
4. The excess power cable between the EUT and the LISN was bundled. The power cables of peripherals were unbundled. All connecting cables of EUT and peripherals were moved to find the maximum emission.

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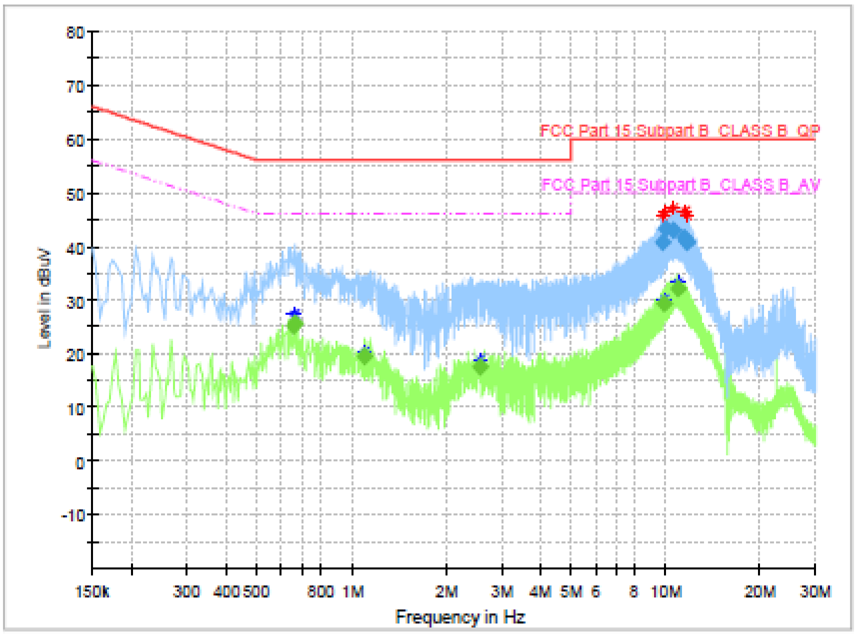
3.3.6.4 Test Result

- **AC Line Conducted Emission (Graph)**

Test Report

Common Information

Test Model:	SP85
Test Standard:	FCC Part 15 Subpart B
Test Mode:	BLE
Test Conditions:	AC 120 V, 60 Hz / 21.8 ¢³C, 48.7 % R. H.
Operator Name:	JongMyoung, Shin
Comment:	LINE
Order Number:	



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.656000	---	25.07	46.00	20.93	1000.0	9.000	L1	10.5
0.660000	---	25.77	46.00	20.23	1000.0	9.000	L1	10.5
1.096000	---	19.66	46.00	26.34	1000.0	9.000	L1	10.5
2.564000	---	17.69	46.00	28.31	1000.0	9.000	L1	10.6
9.832000	40.82	---	60.00	19.18	1000.0	9.000	L1	10.9
9.840000	---	29.23	50.00	20.77	1000.0	9.000	L1	10.9
9.964000	43.20	---	60.00	16.80	1000.0	9.000	L1	10.9
10.568000	42.99	---	60.00	17.01	1000.0	9.000	L1	10.9
10.904000	---	31.95	50.00	18.05	1000.0	9.000	L1	10.9
11.508000	41.59	---	60.00	18.41	1000.0	9.000	L1	10.9
11.604000	41.04	---	60.00	18.96	1000.0	9.000	L1	10.9
11.692000	40.85	---	60.00	19.15	1000.0	9.000	L1	10.9

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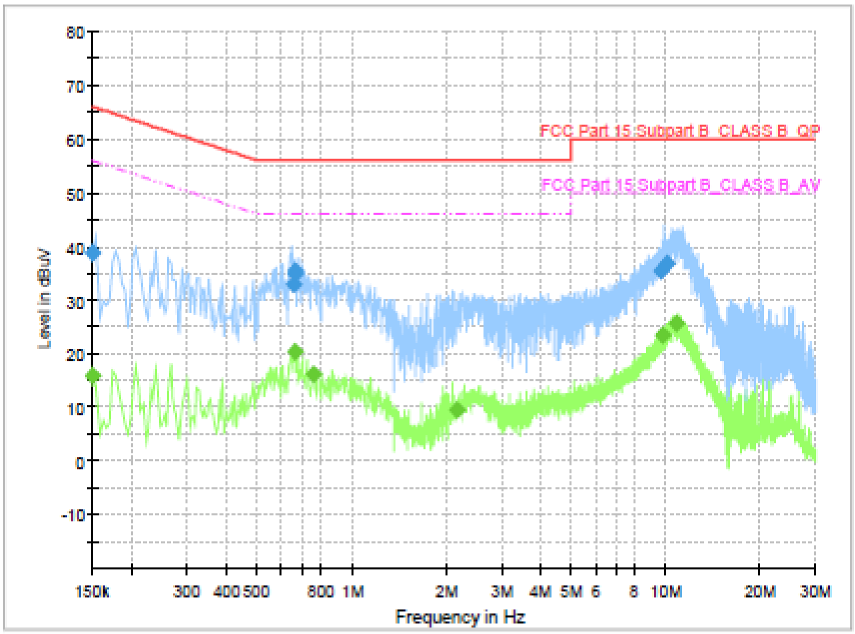
Test Report

Common Information

Test Model:	SP85
Test Standard:	FCC Part 15 Subpart B
Test Mode:	BLE
Test Conditions:	AC 120 V, 60 Hz / 21.8 ¢ªC, 48.7 % R. H.
Operator Name:	JongMyoung, Shin
Comment:	NEUTRAL
Order Number:	



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Line	Corr. (dB)
0.150000	---	15.81	56.00	40.19	1000.0	9.000	N	10.5
0.150000	38.70	---	66.00	27.30	1000.0	9.000	N	10.5
0.656000	32.87	---	56.00	23.13	1000.0	9.000	N	10.5
0.660000	34.85	---	56.00	21.15	1000.0	9.000	N	10.5
0.664000	35.34	---	56.00	20.66	1000.0	9.000	N	10.5
0.664000	---	20.52	46.00	25.48	1000.0	9.000	N	10.5
0.756000	---	16.08	46.00	29.92	1000.0	9.000	N	10.5
2.168000	---	9.46	46.00	36.54	1000.0	9.000	N	10.6
9.656000	35.31	---	60.00	24.69	1000.0	9.000	N	10.9
9.768000	---	23.53	50.00	26.47	1000.0	9.000	N	10.9
10.144000	36.91	---	60.00	23.09	1000.0	9.000	N	10.9
10.876000	---	25.80	50.00	24.20	1000.0	9.000	N	10.9

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APPENDIX I

TEST SETUP

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- Radiated Measurement

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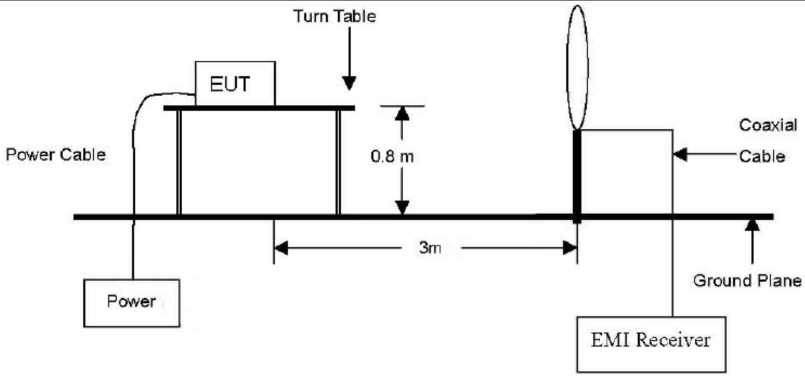
<tr><td>below 30 ㎒</td><td>
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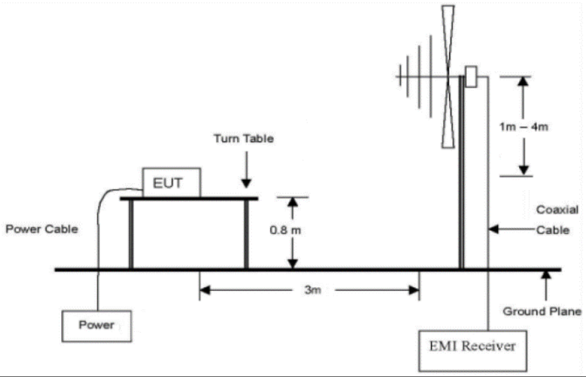
<tr><td>below 1 ㎓</td><td>
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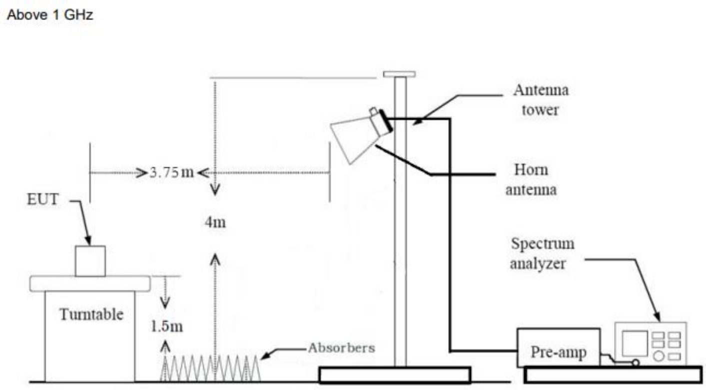
<tr><td>above 1 ㎓</td><td>
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- Conducted Measurement

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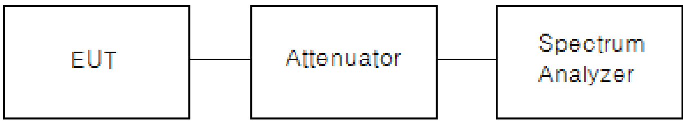
<tr><td>Conducted</td><td>
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APPENDIX II

TEST EQUIPMENT USED FOR TESTS

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	Description	Manufacturer	Serial No.	Model No.	Cal. Date	Next Cal. Date
1	SPECTRUM ANALYZER	R&S	100617	FSP40	2020-03-10	2021-03-10
2	USB Peak & Average Power Sensor	KEYSIGHT	MY58140003	U2044XA	2020-09-02	2021-09-02
3	Humi./Baro/Temp. data recorder	Lutron	38420	MHB-382SD	2020-11-13	2021-11-13
4	SIGNAL GENERATOR	HP	3614A00312	83640B	2019-11-22	2020-11-22
5	Vector SG	R&S	255563	SMBV100A	2020-03-10	2021-03-10
6	Triple Output DC Power Supply	Agilent	MY40038816	E3631A	2020-03-10	2021-03-10
7	ATTENUATOR	INMET	279465	40AH2W	2020-07-28	2021-07-28
8	ATTENUATOR	Weinschel	none	WA41/12-30-12	2020-03-10	2021-03-10
9	High Pass Filter	Mini-Circuits	1741	VHF-3100+	2020-03-10	2021-03-10
10	High Pass Filter	Mini-Circuits	1732	VHF-8400+	2020-03-10	2021-03-10
11	LOOP-ANTENNA	Schwarzbeck	00124	FMZB1519 B	2019-06-27	2021-06-27
12	TRILOG Broadband Antenna	Schwarzbeck	01027	VULB 9168	2019-06-17	2021-06-17
13	Double Ridged Broadband Horn Antenna	Schwarzbeck	02087	BBHA 9120D	2020-06-05	2021-06-05
14	Broadband Horn Antenna	Schwarzbeck	00938	BBHA 9170	2020-05-29	2021-05-29
15	Amplifier	TESTEK	190007-L	TK-PA18H	2020-05-28	2021-05-28
16	Amplifier	TESTEK	190008-L	TK-PA1840H	2020-05-29	2021-05-29
17	LISN	Schwarzbeck	00984	NSLK 8127	2020-05-28	2021-05-28
18	EMI Test Receiver	R&S	102116	ESRP3	2020-05-28	2021-05-28

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