Product Name: Smart Phone	**Report No: FCC022023-00500RF2**
Product Model: N50	**Security Classification: Open**
Version: V1.0	**Total Page: 44**

TIRT Testing Report

Prepared By:	**Checked By:**	**Approved By:**	
Stone Tang	Randy Lv	Daniel Chen	
Stone Tang	Randy LV	Daniel Chen	

RF TEST REPORT

FCC ID: 2AX4YN50

According to

47 CFR FCC Part 15, Subpart C(Section 15.247)

ANSI C63.10:2013

Equipment	:	Smart Phone
Model No.	:	N50
Trademark	:	DOOGEE
Applicant	:	Shenzhen DOOGEE Hengtong Technology CO.,LTD B, 2/F, Building A4, Silicon Valley Power Digital Industrial Park, No. 22, Longhua New District, Shenzhen, China

- The test result referred exclusively to the presented test model /sample.
- Without written approval of TIRT Inc. the test report shall not reproduced except in full.
- Test date: 2023/02/20~2023/03/11

Lab: Beijing TIRT Technology Service Co.,Ltd Shenzhen

Add: 101, 3 # Factory Building, Gongjin Electronics Shatin Community, Kengzi Street, Pingshan District, Shenzhen, China

TEL: +86-0755-27087573

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History of this test report

Original Report Issue Date: 2023.03.13

● No additional attachment

○ Additional attachments were issued following record

Attachment No.	Issue Date	Description

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below:

Test Item	Test Requirement	Standards Paragraph	Result
Conducted Emission	FCC PART 15	15.207	P
6dB Bandwidth	FCC PART 15	15.247 (a)(2)	P
Output Power	FCC PART 15	15.247 (b)(3)	P
Radiated Spurious Emission	FCC PART 15	15.247 (c)	P
Conducted Spurious & Band Edge Emission	FCC PART 15	15.247 (d)	P
Power Spectral Density	FCC PART 15	15.247 (e)	P
Radiated Band Edge Emission	FCC PART 15	15.205	P
Antenna Requirement	FCC PART 15	15.203	P

Note: 1. P is an abbreviation for Pass.
2. F is an abbreviation for Fail.
3. N/A is an abbreviation for Not Applicable.
4. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT Name	:	Smart Phone
Model No.	:	N50
DIFF.	:	N/A
Power supply	:	DC 9V from adapter, DC 3.7V from battery
Radio Technology	:	Bluetooth V5.0 BLE
Operation frequency	:	2402-2480MHz
Channel No.	:	40 Channels
Channel spacing	:	2MHz
Rate	:	1Mbps /2Mbps
Modulation type	:	GFSK
Antenna Type	:	Internal antenna, Maximum Gain is 1.0dBi. Antenna information is provided by applicant.
Software version	:	DOOGEE-N50-EEA-Android13.0-20230216
Hardware version	:	SC6007_MB_V1.1.0
Connector cable loss	:	N/A
Intend use environment	:	Residential, commercial and light industrial environment

2.2. Accessories of Device (EUT)

Accessories : /

Manufacturer : /

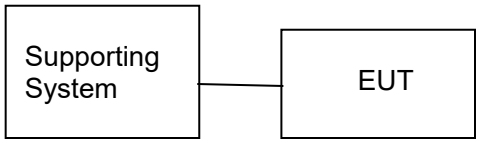
Model : /

Ratings : /

2.3. Tested Supporting System Details

No.	Description	Manufacturer	Model	Serial Number	Certification or SDoC
1	--	--	--	--	--

2.4. Block Diagram of connection between EUT and simulators



2.5. Test Mode Description

Tested mode, channel, and data rate information		
Mode	**Channel**	**Frequency (MHz)**
GFSK (1M/2M)	Low :CH1	2402
	Middle: CH20	2440
	High: CH40	2480

2.6. Test Conditions

Items	Required	Actual
Temperature range:	15-35℃	24℃
Humidity range:	25-75%	56%
Pressure range:	86-106kPa	980kPa

2.7. Test Facility

Company:	Beijing TIRT Technology Service Co.,Ltd Shenzhen
Address:	101, 3 # Factory Building, Gongjin Electronics Shatin Community, Kengzi Street, Pingshan District, Shenzhen, China
CNAS Registration Number:	CNAS L14158
A2LA Registration Number:	6049.01
FCC Designation Number:	CN1309
Test Firm Registration Number:	825524
Telephone:	+86-0755-27087573

2.8. Measurement Uncertainty

Uncertainty	
Parameter	Uncertainty
Occupied Channel Bandwidth	±142.12 KHz
RF power conducted	±0.74 dB
RF power radiated	±3.25dB
Spurious emissions, conducted	±1.78dB
Spurious emissions, radiated (9KHz~30MHz)	±2.56dB
Spurious emissions, radiated (30MHz～1GHz)	±4.6dB
Spurious emissions, radiated (Above 1GHz)	±4.9dB
Conduction Emissions(150kHz~30MHz)	±3.1 dB
Humidity	±4.6%
Temperature	±0.7°C
Time	±1.25%

2.9. Test Equipment List

No.	Equipment	Manufacturer	Type No.	Serial No.	Cal. date (yyyy/mm/dd)	Cal. Due date (yyyy/mm/dd)
1	EMI Receiver	Rohde&Schwarz	ESCI	100718	2022/11/09	2023/11/10
2	AMN	Rohde&Schwarz	ENV216	100075	2022/11/09	2023/11/10
3	AMN	Schwarzbeck	NSLK8127	#829	2022/11/09	2023/11/10
4	ECSI RF IN RF Cable	Rohde&Schwarz	RP-X1	\	2022/11/17	2023/11/16
5	ECSI RF IN RF Cable	Rohde&Schwarz	Sapre sm	\	2022/11/09	2023/11/10
6	EMI Receiver	Rohde&Schwarz	ESR7	102013	2022/11/09	2023/11/10
7	Spectrum analyzer	Rohde&Schwarz	FSV30	103741	2022/11/09	2023/11/10
8	Spectrum analyzer	KEYSIGHT	N9010A	MY51440158	2022/11/09	2023/11/10
9	Integral Antenna	Schwarzbeck	VULB 9163	9163-868	2022/12/25	2023/12/24
10	Integral Antenna	Schwarzbeck	BBHA 9120D	BBHA 9120D 1201	2022/11/09	2023/11/10
11	Integral Antenna	Schwarzbeck	BBHA 9170	9170#685	2022/11/06	2023/11/10
12	Preamplifier	CD Systems Inc	PAP-03036-30	85060000	2022/11/09	2023/11/10
13	Preamplifier	Schwarzbeck	BBV9721	9721-019	2022/11/09	2023/11/10
14	Preamplifier	emci	EMC012645 SE	980417	2022/11/09	2023/11/10
15	ECSI RF IN RF Cable	Rohde&Schwarz	AP-X1	\	2022/11/09	2023/11/10
16	Spectrum Analyzer	Agilent	N9010A	MY52221119	2022/11/09	2023/11/10
17	Power Collection Unit	Tonscend	JS0806-2	188060134	2022/09/12	2023/09/11
18	Tonscend Test System	Tonscend	2.6.77.0518	NA	NA	NA
19	Power Sensor	Agilent	U2021XA	MY55410011	2022/09/12	2023/09/11
20	Power Sensor	Agilent	U2021XA	MY55410012	2022/09/12	2023/09/11
21	Power Sensor	Agilent	U2021XA	MY55410018	2022/09/12	2023/09/11
22	Power Sensor	Agilent	U2021XA	MY55410019	2022/09/12	2023/09/11
23	Temp&Humidity Recorder	Anymetre	JR900	NA	2022/11/03	2023/11/02
24	Temp&Humidity Chamber	ETOMA	NTH1100-30 A	16080628	2022/09/01	2023/08/30

3. SPURIOUS EMISSION

3.1. Test Limits

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Harmonic emissions limits comply with below 54 dBuV/m at 3m. Other emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or comply with the radiated emissions limits specified in section 15.209(a) limit in the table below has to be followed.

NOTE:

a) The tighter limit applies at the band edges.
b) Emission Level(dB uV/m)=20log Emission Level(uv/m)

3.2. Test Procedure

The measuring distance of 3m shall be used for measurements at frequency up to 1GH and above 1GHz, The EUT was placed on a rotating 0.8 m high above ground for below 1GHz and 1.5m high for above1GHz testing, The table was rotated 360 degrees to determine the position of the highest radiation

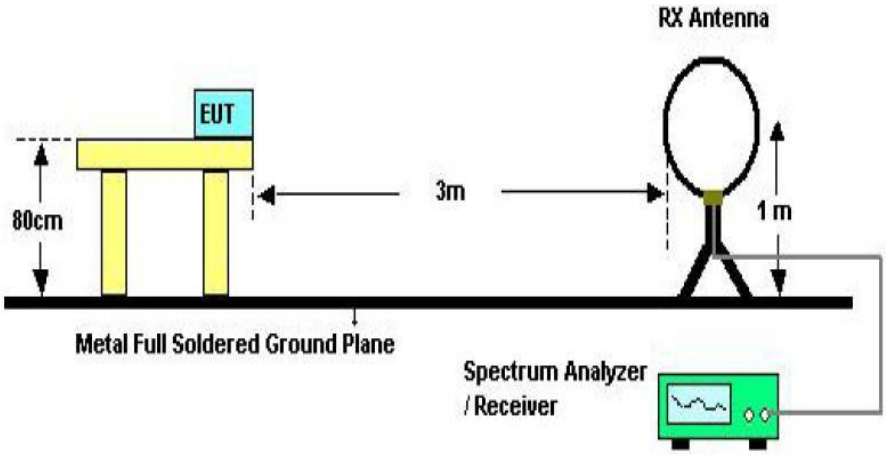
The Test antenna shall vary between 1m and 4m, Both Horizontal and Vertical antenna are set of make measurement.

The initial step in collecting conducted emission data is a spectrum analyzer Peak detector mode pre-scanning the measurement frequency range. Significant Peaks are then marked. and then Qusia Peak Detector mode premeasured

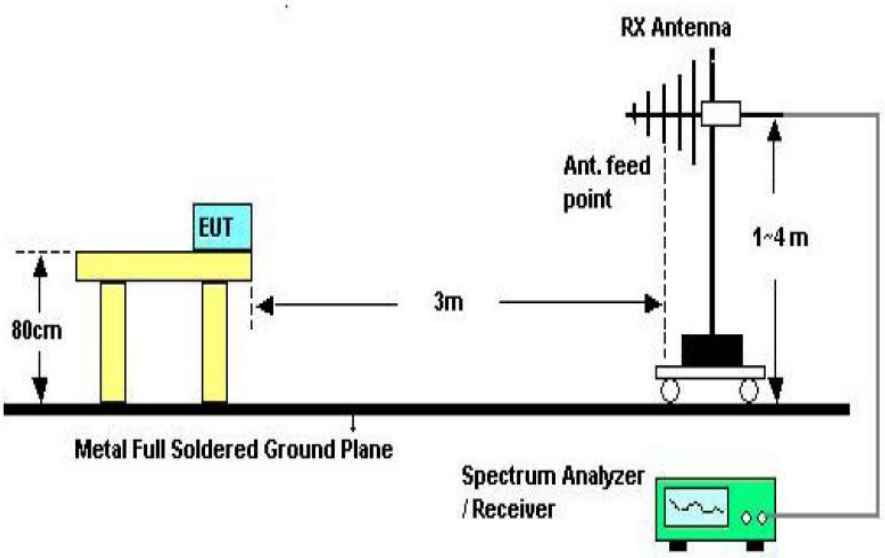
If Peak value comply with QP limit Below 1GHz.The EUT deemed to comply with QP limit. But the Peak value and average value both need to comply with applicable limit above 1GHz.

For the actual test configuration, please see the test setup photo.

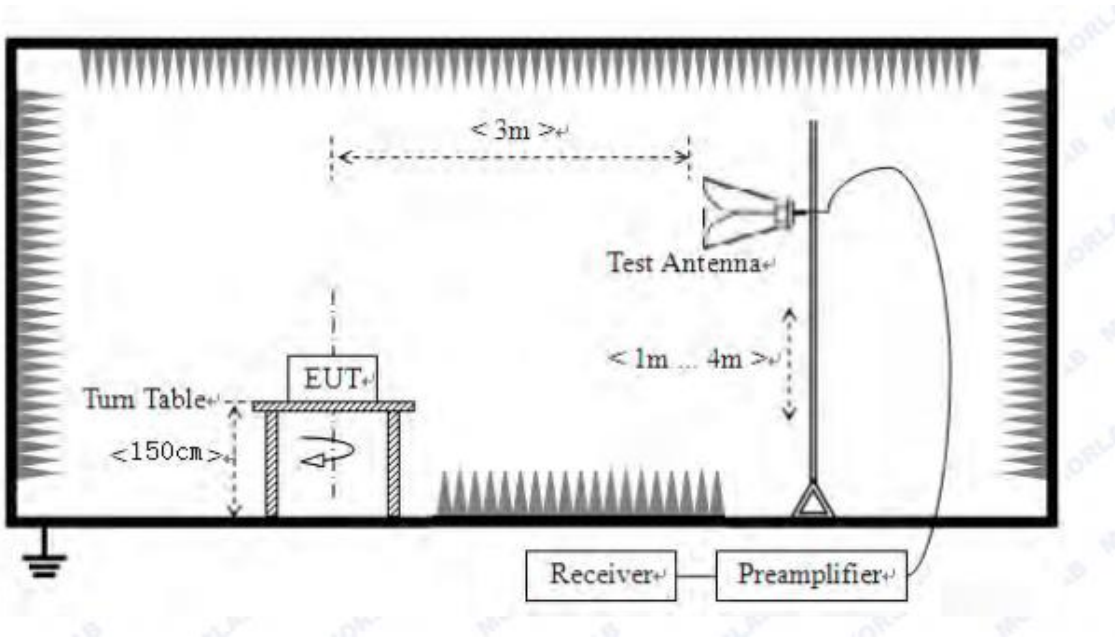
3.3. Test Setup



Below 30MHz Test Setup



Above 30MHz Test Setup



Above 1GHz Test Setup

3.4. Test Results

Test Condition

Continual Transmitting in maximum power.

9KHz~150KHz	RBW200Hz	VBW1KHz
150KHz~30MHz	RBW9KHz	VBW 30KHz
30MHZ~1GHz	RBW120KHz	VBW 300KHz
Above1GHz	RBW1MHz	VBW 3MHz

We have scanned the 10th harmonic from 9 kHz to the EUT.

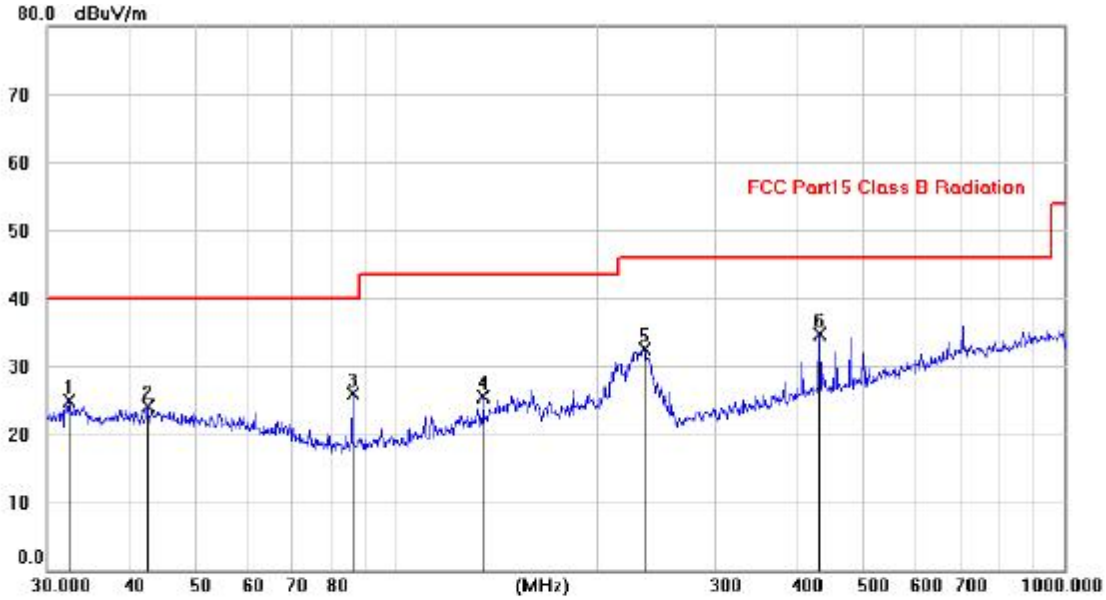
Detailed information please see the following page.

From 9KHz to 30MHz: Conclusion: PASS

Note: 1.The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

2. Only show the test data of the worst Channel in this report.

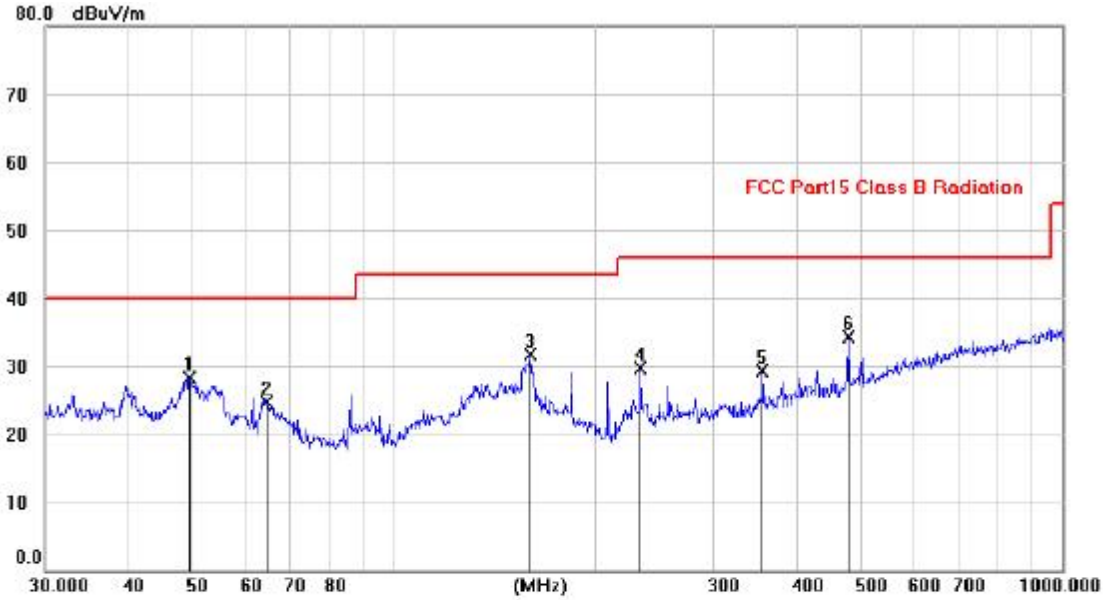
Antenna polarity: Horizontal



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		32.4247	11.33	13.62	24.95	40.00	-15.05	peak			
2		42.4557	9.89	14.29	24.18	40.00	-15.82	peak			
3		86.0189	15.96	9.98	25.94	40.00	-14.06	peak			
4		135.1579	11.55	13.96	25.51	43.50	-17.99	peak			
5		235.4030	19.98	12.44	32.42	46.00	-13.58	peak			
6	*	430.1256	17.57	17.08	34.65	46.00	-11.35	peak			

Note:1. *:Maximum data; x:Over limit; !:over margin.
2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Antenna polarity: Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		49.4690	14.20	14.03	28.23	40.00	-11.77	peak			
2		64.5006	12.44	12.32	24.76	40.00	-15.24	peak			
3		159.7470	16.57	15.04	31.61	43.50	-11.89	peak			
4		233.4850	17.37	12.39	29.76	46.00	-16.24	peak			
5		356.3423	14.02	15.36	29.38	46.00	-16.62	peak			
6	*	479.2375	16.46	17.93	34.39	46.00	-11.61	peak			

Note:1. *:Maximum data; x:Over limit; !:over margin.
2.Measurement=Reading Level+Correct Factor; Correct Factor=Antenna Factor+Cable Loss.

Notes: Above is below 1GHz test data. This report only shall the worst case mode for TX 2402MHz(1Mbps).

From 1G-25GHz

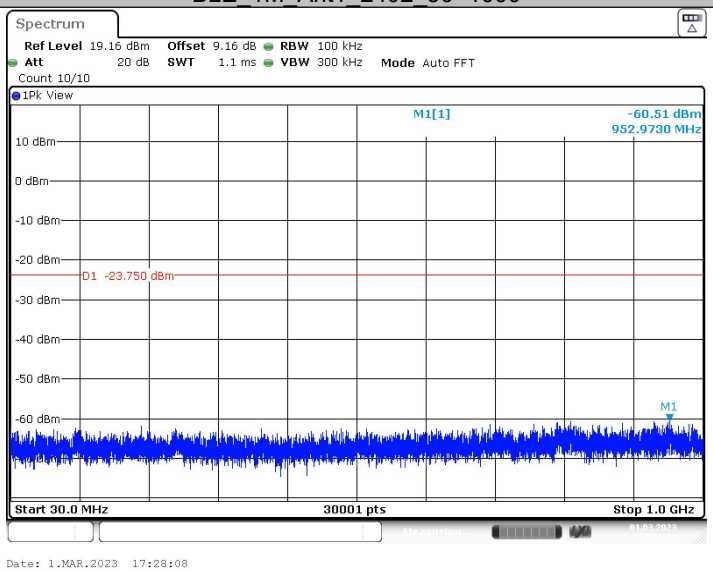
Test Mode: TX Low									
Freq (MHz)	Read Level (dBuV/m)	Polar (H/V)	Antenna Factor (dB/m)	Cable loss(dB)	Amp Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
4804	48.80	V	33.93	10.18	34.26	58.65	74	-15.35	PK
4804	36.30	V	33.93	10.18	34.26	46.15	54	-7.85	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
4804	47.81	H	33.93	10.18	34.26	57.66	74	-16.34	PK
4804	35.58	H	33.93	10.18	34.26	45.43	54	-8.57	AV
7206	/	/	/	/	/	/	/	/	/
9608	/	/	/	/	/	/	/	/	/
Test Mode: TX Mid									
4880	49.37	V	33.95	10.20	34.26	59.26	74	-14.74	PK
4880	35.80	V	33.95	10.20	34.26	45.69	54	-8.31	AV
7320	/	/	/	/	/	/	/	/	/
9760	/	/	/	/	/	/	/	/	/
4880	48.93	H	33.95	10.20	34.26	58.82	74	-15.18	PK
4880	34.81	H	33.95	10.20	34.26	44.70	54	-9.30	AV
7320	/	/	/	/	/	/	/	/	/
9760	/	/	/	/	/	/	/	/	/
Test Mode: TX High									
4960	47.69	V	33.98	10.22	34.25	57.64	74	-16.36	PK
4960	33.97	V	33.98	10.22	34.25	43.92	54	-10.08	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/
4960	46.39	H	33.98	10.22	34.25	56.34	74	-17.66	PK
4960	32.49	H	33.98	10.22	34.25	42.44	54	-11.56	AV
7440	/	/	/	/	/	/	/	/	/
9920	/	/	/	/	/	/	/	/	/

Note:
1, Result = Read level + Antenna factor + cable loss-Amp factor
2, All the other emissions not reported were too low to read and deemed to comply with FCC limit.

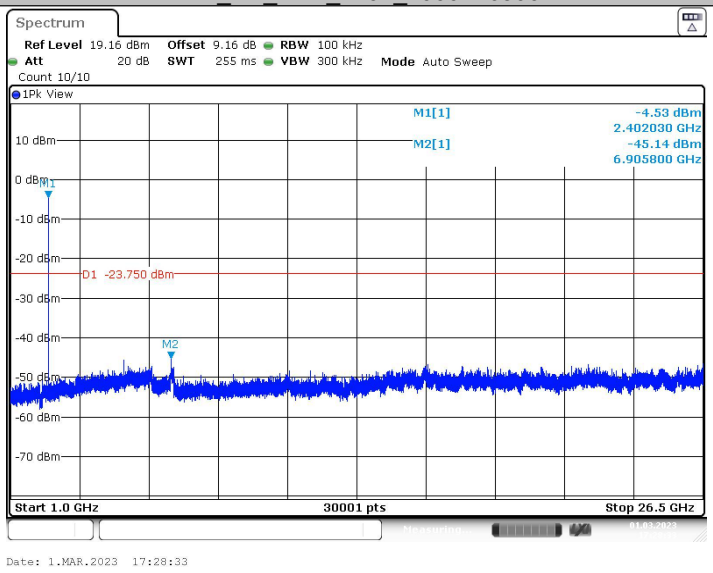
Note: This report only shall the worst case mode for TX (1Mbps).

Conducted RF Spurious Emission

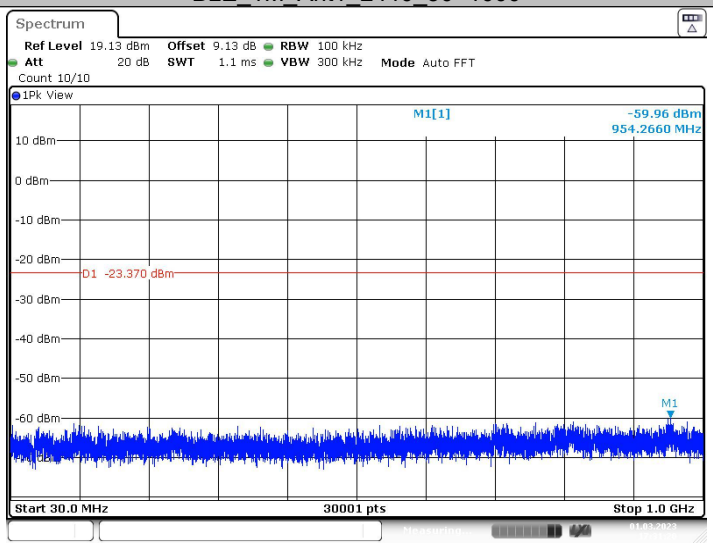
BLE_1M_Ant1_2402_30~1000



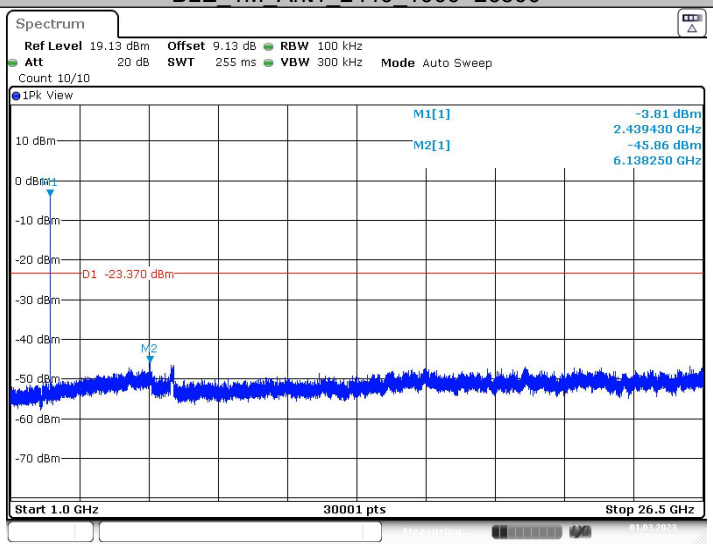
BLE_1M_Ant1_2402_1000~26500



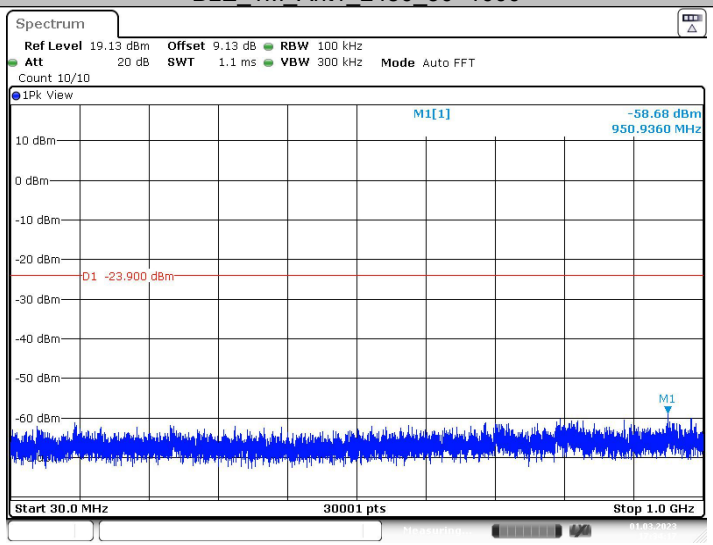
BLE_1M_Ant1_2440_30~1000



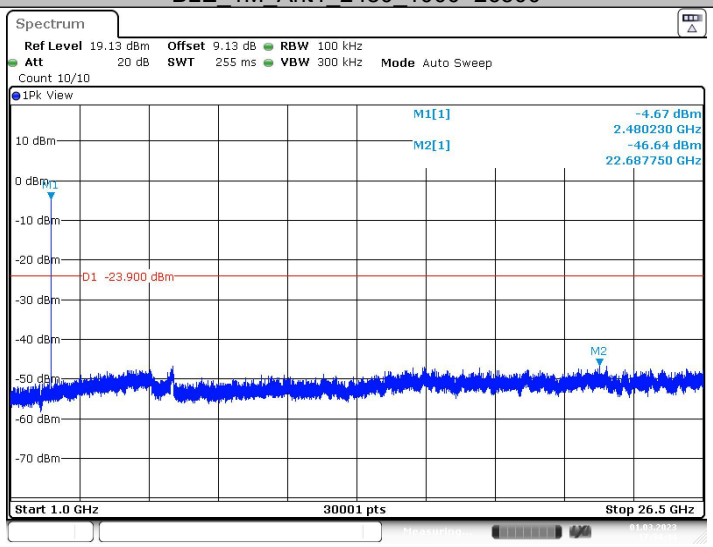
BLE_1M_Ant1_2440_1000~26500



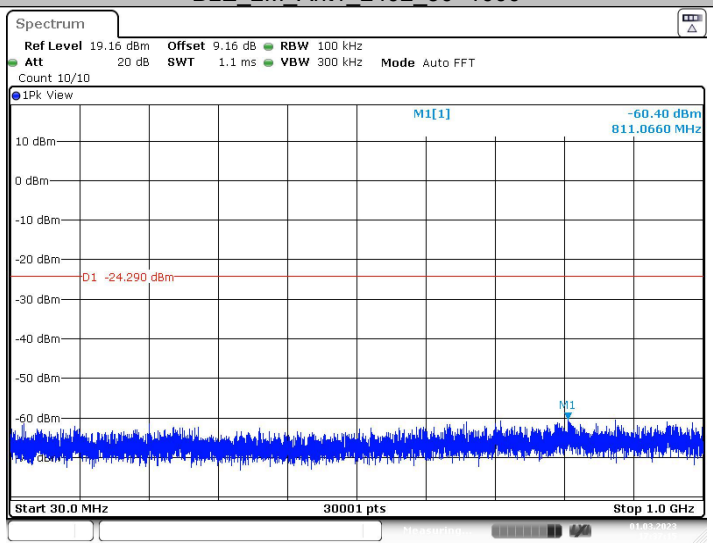
BLE_1M_Ant1_2480_30~1000



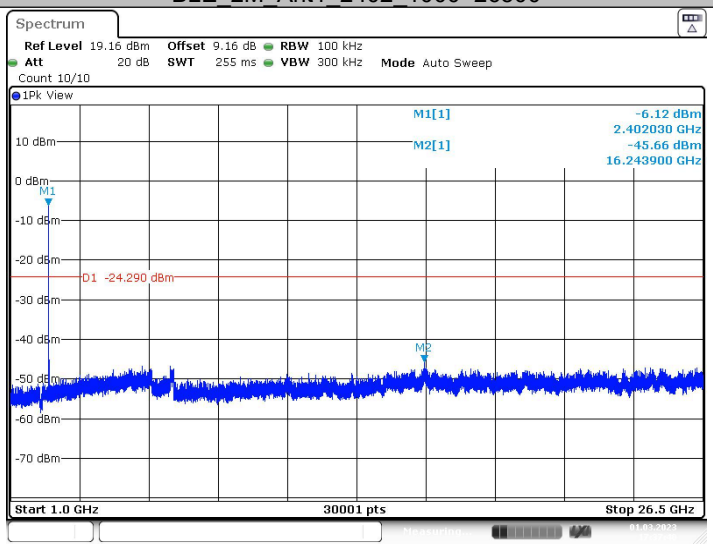
BLE_1M_Ant1_2480_1000~26500



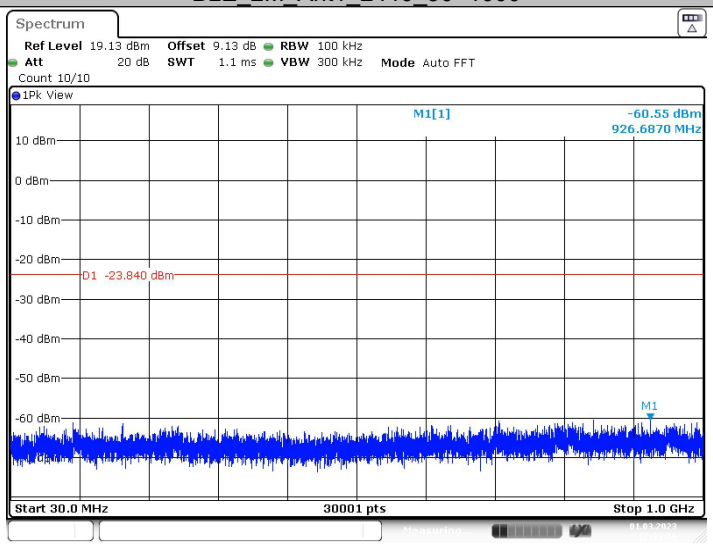
BLE_2M_Ant1_2402_30~1000



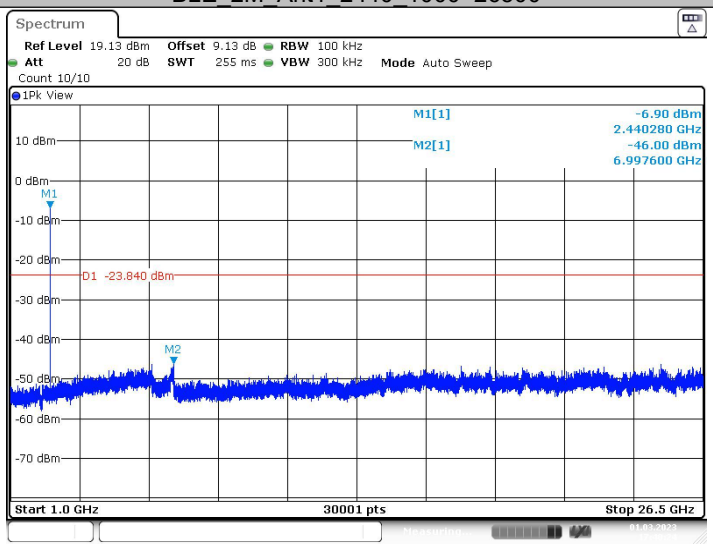
BLE_2M_Ant1_2402_1000~26500



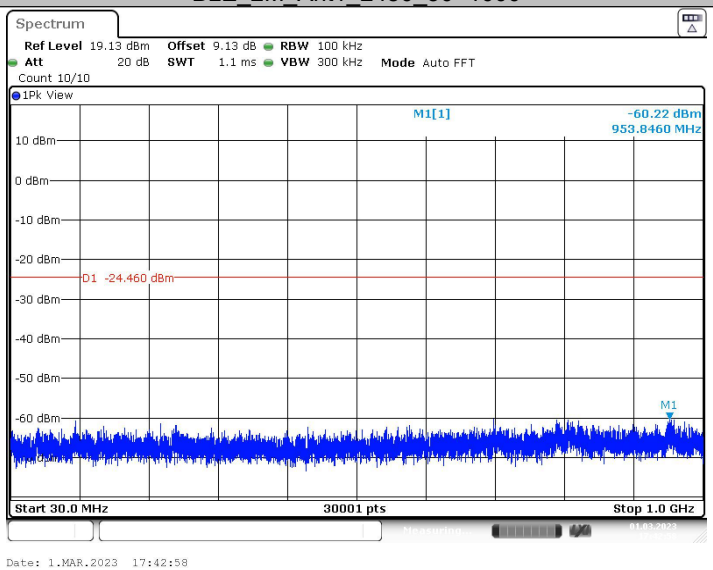
BLE_2M_Ant1_2440_30~1000



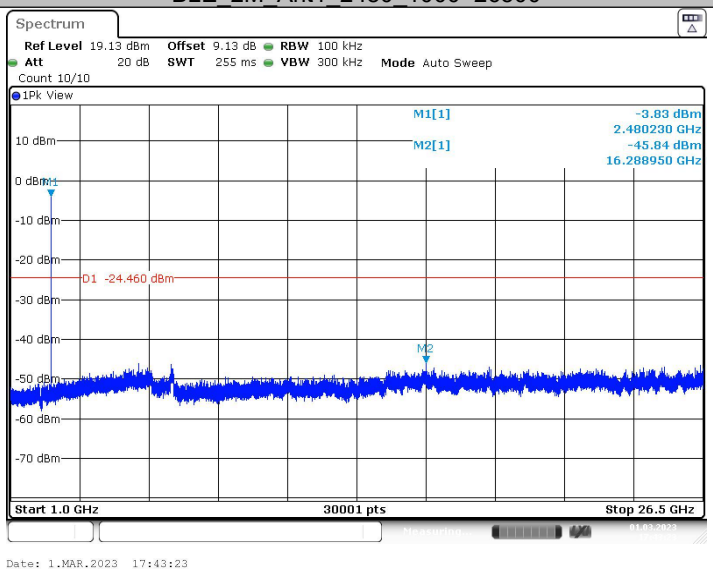
BLE_2M_Ant1_2440_1000~26500



BLE_2M_Ant1_2480_30~1000



BLE_2M_Ant1_2480_1000~26500



4. POWER LINE CONDUCTED EMISSION

4.1. Test Limits

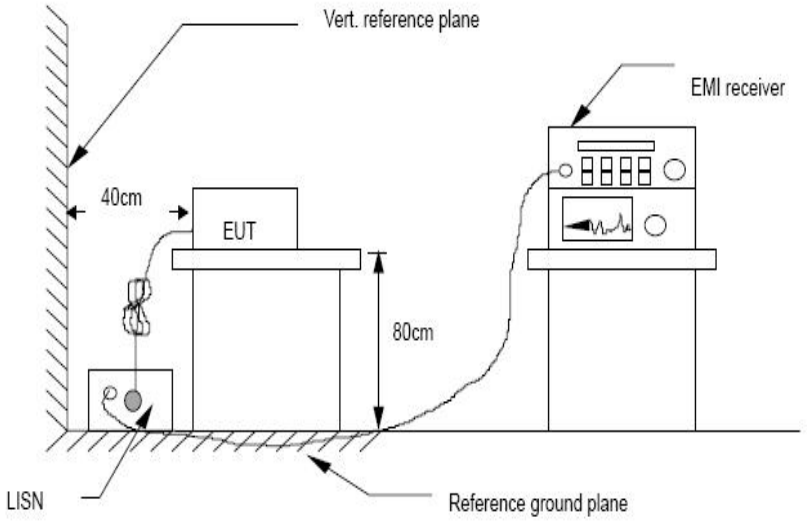
Frequency	Limits dB(μV)	
MHz	Quasi-peak Level	Average Level
0.15 -0.50	66 -56*	56 - 46*
0.50 -5.00	56	46
5.00 -30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.
3. The limit decreases in line with the logarithm of the frequency in rang of 0.15 to 0.50 MHz.

4.2. Test Procedure

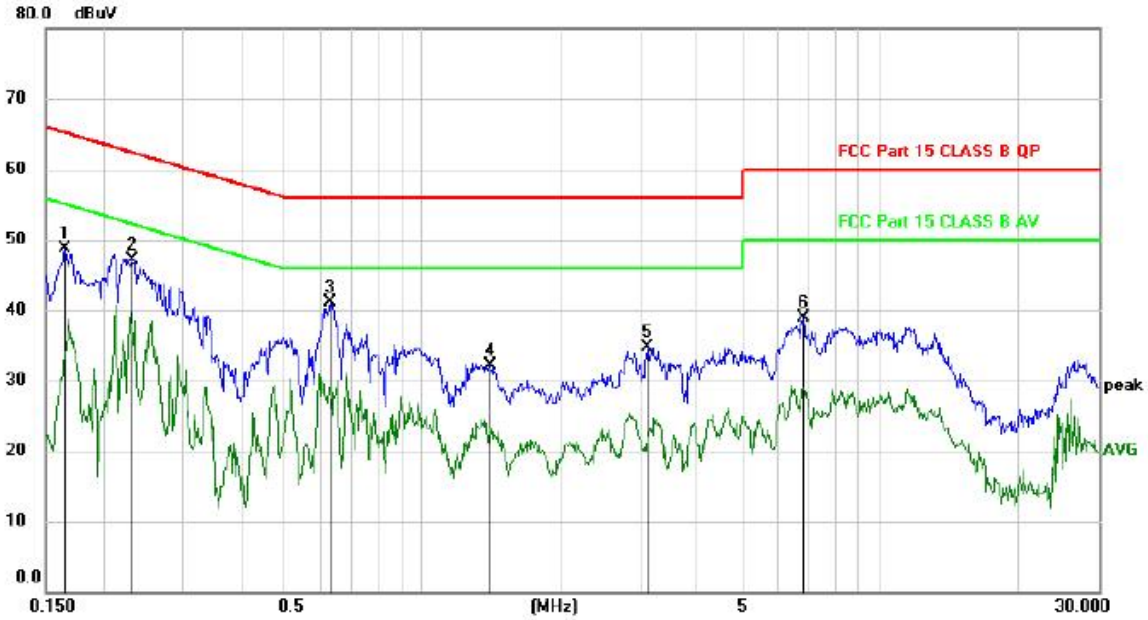
The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10:2013 on Conducted Emission Measurement.
The bandwidth of test receiver is set at 9 kHz.

4.3. Test Setup



4.4. Test Results

Polarity: L

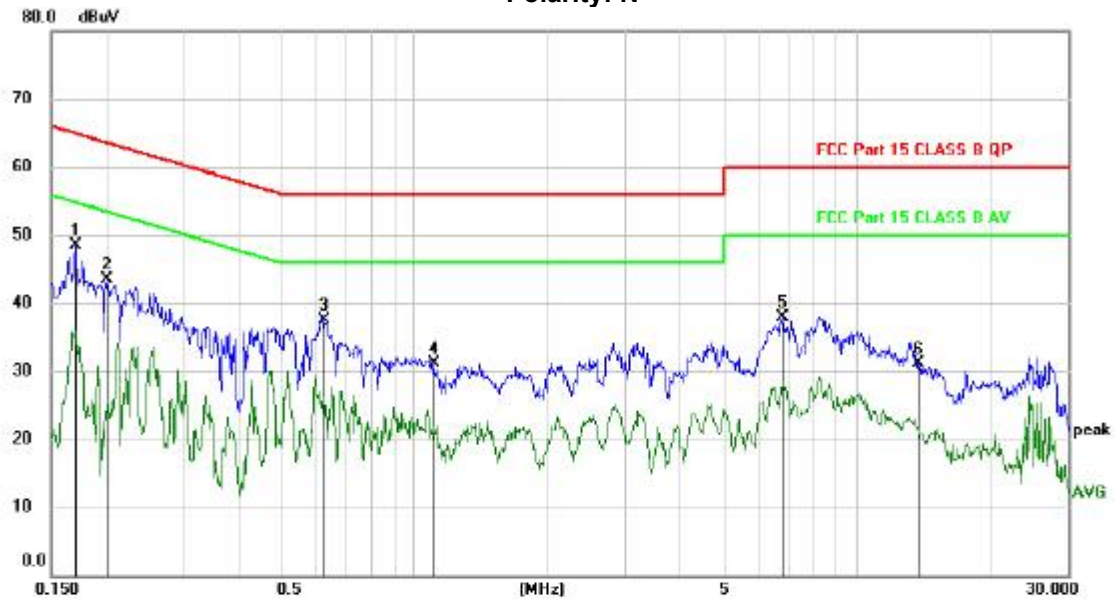


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.1650	38.73	9.93	48.66	65.21	-16.55	peak	
2		0.2316	37.22	9.95	47.17	62.39	-15.22	peak	
3	*	0.6300	31.21	9.92	41.13	56.00	-14.87	peak	
4		1.4069	22.16	9.90	32.06	56.00	-23.94	peak	
5		3.1018	24.83	9.96	34.79	56.00	-21.21	peak	
6		6.7888	28.84	10.11	38.95	60.00	-21.05	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

Polarity: N



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1	*	0.1710	38.54	9.93	48.47	64.91	-16.44	peak	
2		0.2010	33.67	9.92	43.59	63.57	-19.98	peak	
3		0.6270	27.59	9.92	37.51	56.00	-18.49	peak	
4		1.1038	21.25	9.90	31.15	56.00	-24.85	peak	
5		6.7888	27.84	10.11	37.95	60.00	-22.05	peak	
6		13.7460	20.82	10.30	31.12	60.00	-28.88	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Note: Measurement=Reading Level+Correc Factor. Factor=(LISN or ISN or PLC or Current Probe)Factor+Cable

5. CONDUCTED MAXIMUM OUTPUT POWER

5.1. Test limits

Please refer section RSS-247 & 15.247.

5.2. Test Procedure

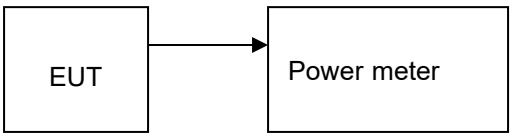
Details see the KDB 558074 D01 15.247 Meas Guidance v05r02

5.2.1 Place the EUT on the table and set it in transmitting mode.

5.2.2 Measure out each mode and each bands peak output power of EUT.

Note: The cable loss and attenuator loss were offset into measure device as amplitude offset.

5.3. Test Setup



5.4. Test Results

Test Mode	Antenna	Freq(MHz)	Conducted Peak Powert[dBm]	Conducted Limit[dBm]	Verdict
BLE_1M	Ant1	2402	-3.29	≤30	PASS
		2440	-2.73	≤30	PASS
		2480	-3.15	≤30	PASS
BLE_2M	Ant1	2402	-3.33	≤30	PASS
		2440	-2.71	≤30	PASS
		2480	-3.36	≤30	PASS

6. PEAK POWER SPECTRAL DENSITY

6.1. Test limits

6.1.1 Please refer section RSS-247 & 15.247.

6.1.2 For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

6.1.3 The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

6.2. Test Procedure

Details see the KDB 558074 D01 15.247 Meas Guidance v05r02

6.2.1 Place the EUT on the table and set it in transmitting mode.

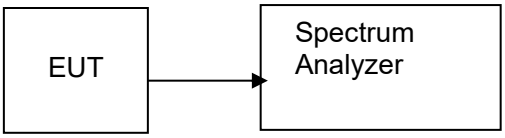
6.2.2 Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.

6.2.3 Set the spectrum analyzer as RBW = 3kHz(Set the RBW to: 3 kHz≤RBW≤100 kHz.), VBW = 10kHz(Set the VBW≥3×RBW), span=1.5×DTS bandwidth., detail see the test plot.

6.2.4 Record the max reading.

6.2.5 Repeat the above procedure until the measurements for all frequencies are completed.

6.3. Test Setup



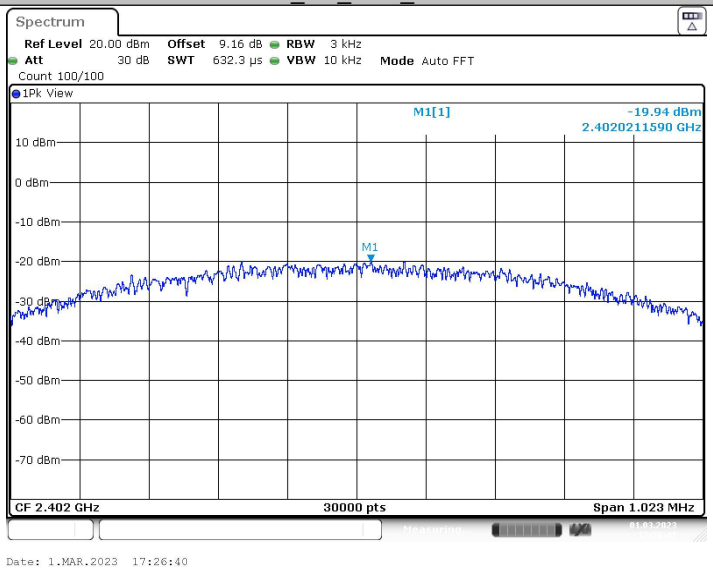
6.4. Test Results

Pass

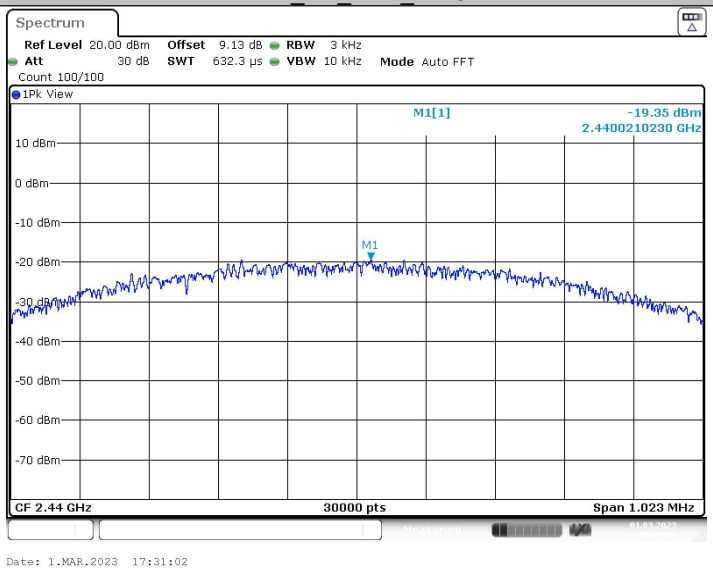
The test results are listed in next pages.

TestMode	Antenna	Freq(MHz)	Result[dBm/3kHz]	Limit[dBm/3kHz]	Verdict
BLE_1M	Ant1	2402	-19.94	≤8.00	PASS
		2440	-19.35	≤8.00	PASS
		2480	-19.95	≤8.00	PASS
BLE_2M	Ant1	2402	-22.04	≤8.00	PASS
		2440	-21.24	≤8.00	PASS
		2480	-21.99	≤8.00	PASS

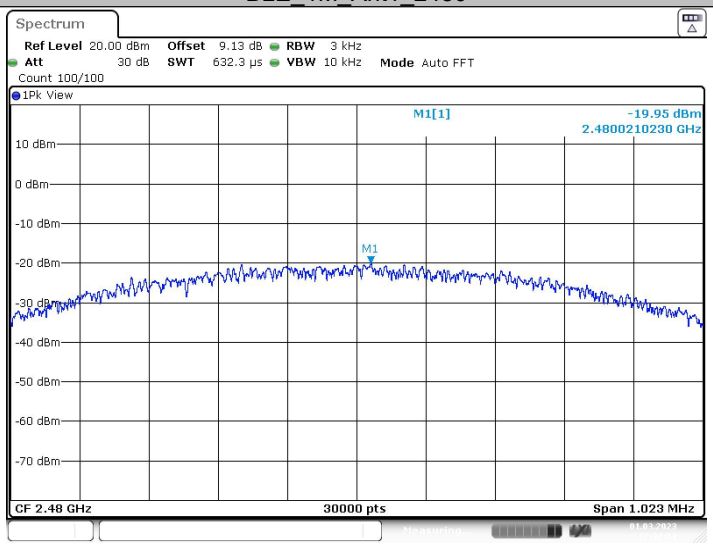
BLE_1M_Ant1_2402



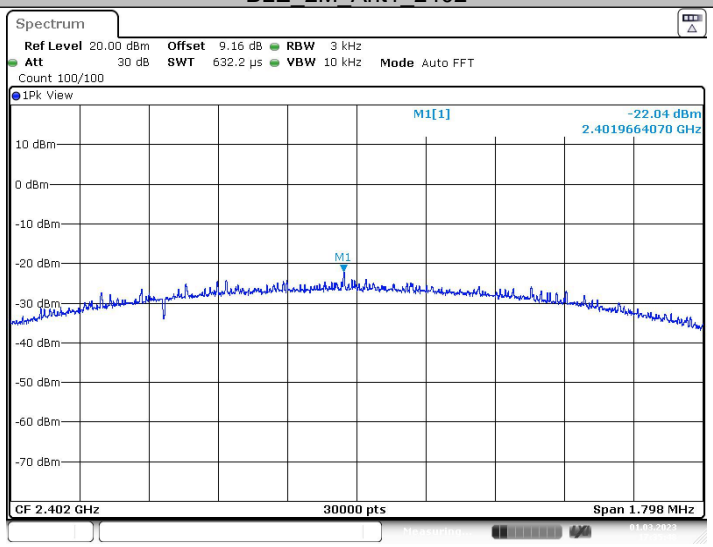
BLE_1M_Ant1_2440



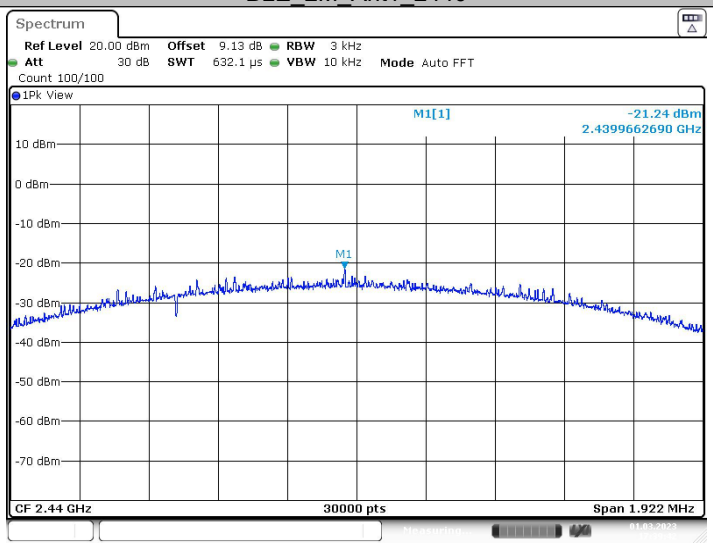
BLE_1M_Ant1_2480



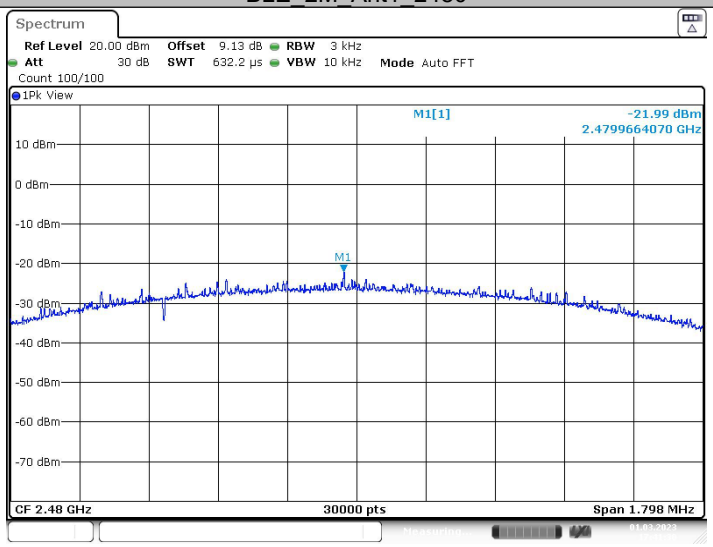
BLE_2M_Ant1_2402



BLE_2M_Ant1_2440



BLE_2M_Ant1_2480



7. BANDWIDTH

7.1. Test limits

Please refer section RSS-247 & 15.247

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500 kHz.

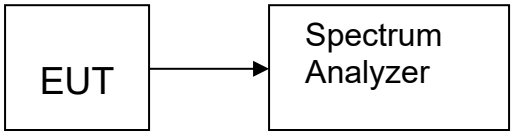
7.2. Test Procedure

Details see the KDB 558074 D01 15.247 Meas Guidance v05r02

a) The bandwidth is measured at an amplitude level reduced 20dB from the reference level. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

b) The test receiver set RBW = 100kHz, VBW≥3*RBW =300kHz, sweep time set auto, detail see the test plot.

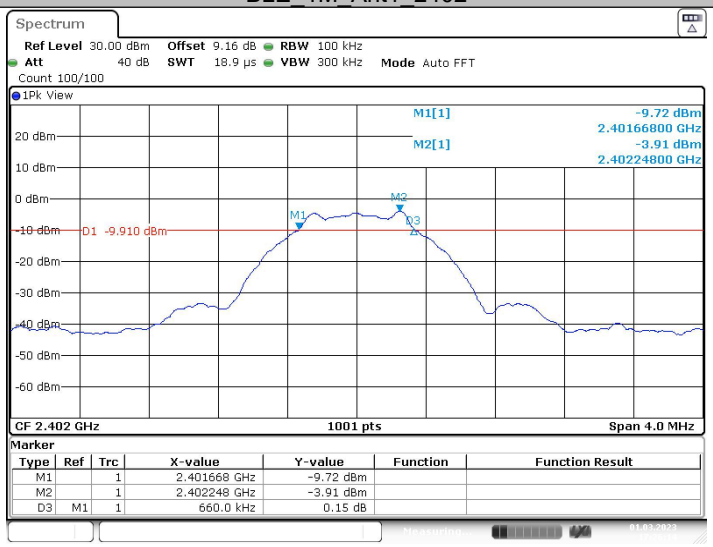
7.3. Test Setup



7.4. Test Results

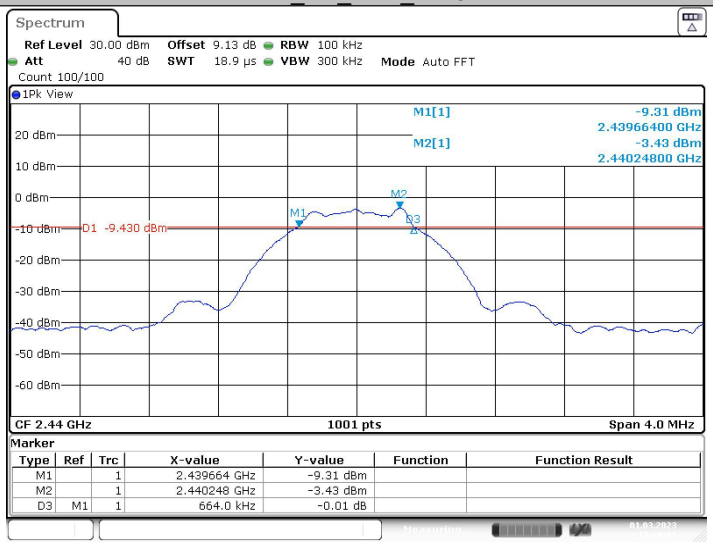
TestMode	Antenna	Freq(MHz)	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
BLE_1M	Ant1	2402	0.66	2401.67	2402.33	0.5	PASS
		2440	0.66	2439.66	2440.33	0.5	PASS
		2480	0.66	2479.66	2480.33	0.5	PASS
BLE_2M	Ant1	2402	1.16	2401.42	2402.58	0.5	PASS
		2440	1.24	2439.35	2440.59	0.5	PASS
		2480	1.16	2479.42	2480.58	0.5	PASS

BLE_1M_Ant1_2402



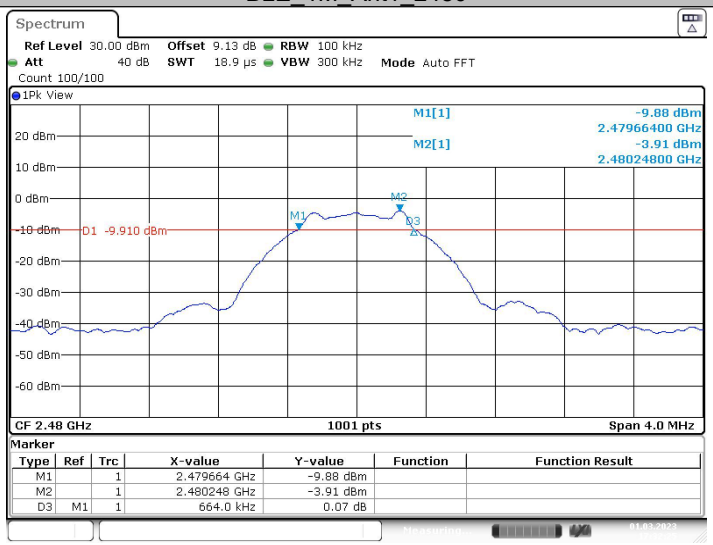
Date: 1.MAR.2023 17:26:15

BLE_1M_Ant1_2440



Date: 1.MAR.2023 17:30:36

BLE_1M_Ant1_2480



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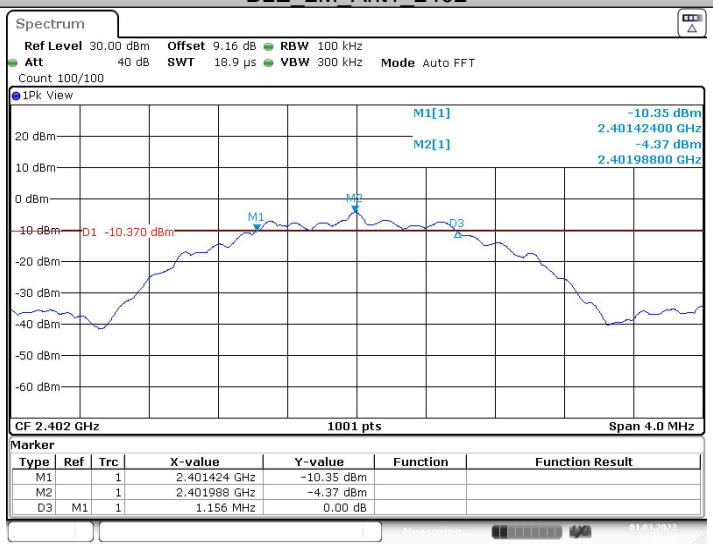
BLE_2M_Ant1_2402



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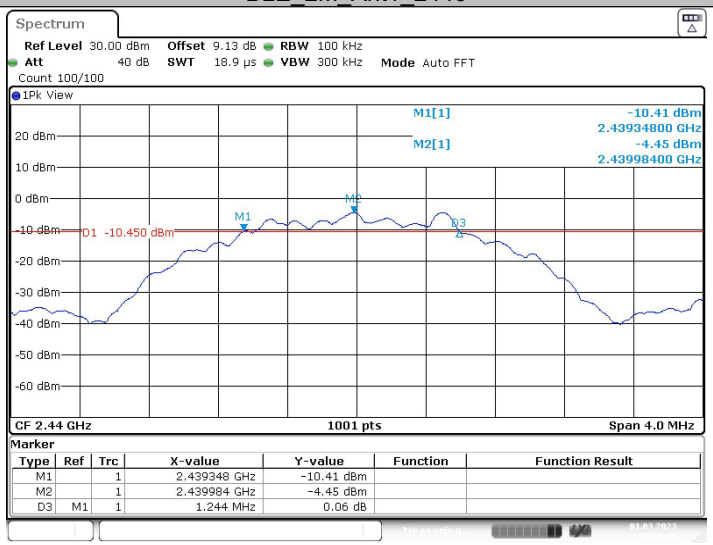
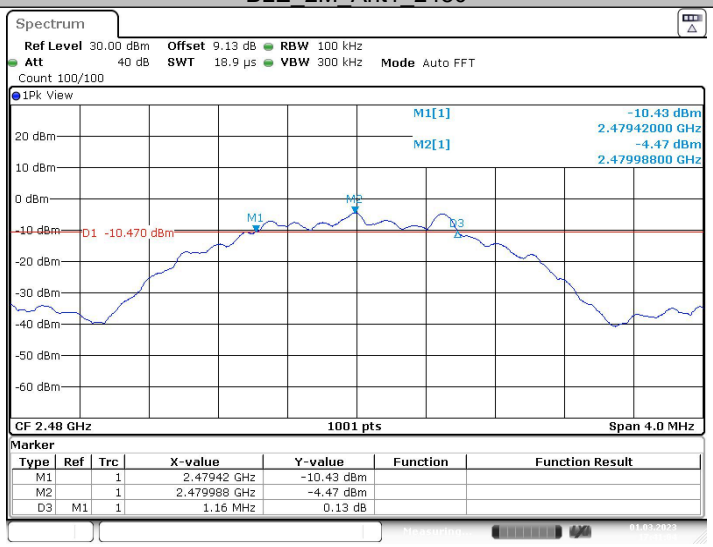
BLE_2M_Ant1_2440



Date: 1.MAR.2023 17:39:16

BLE_2M_Ant1_2480



Date: 1.MAR.2023 17:41:04