FCC - TEST REPORT

Report Number	:	**64.790.19.02566.01**	Date of Issue:	July 1, 2019

Model	:	MS-BN22
Product Type	:	Wireless Earphones
Trade Mark	:	MINISO
Applicant	:	MINISO Corporation
License holder	:	MINISO Corporation
Address	:	Room 2501, No. 486 Heye Square Kangwang Middle Road, Liwan District, Guangzhou, Guangdong, China

Test Result	:	■ **Positive** ☐ **Negative**
Total pages including Appendices	:	52

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TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
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2 Details about the Test Laboratory

Details about the Test Laboratory
Test Site 1

Company name:	TÜV SÜD Certification and Testing (China) Co., Ltd. Shenzhen Branch Building 12&13, Zhiheng Wisdomland Business Park, Nantou Checkpoint Road 2, Nanshan District, Shenzhen City, 518052, P. R. China
FCC Registration Number:	514049
IC Registration Number:	10320A
Telephone:	86 755 8828 6998
Fax:	86 755 828 5299

3 Description of the Equipment Under Test

Product: Wireless Earphones

Model no.: MS-BN22

FCC ID: 2ART4-BN22

Rating: DC 3.7V

RF Transmission Frequency: 2402MHz to 2480MHz

Modulation: GFSK, π/4-DQPSK, 8DPSK

Antenna Type: PCB Antenna

Channel No:79

Antenna Gain: 0dBi

Description of the EUT: The EUT is a Wireless Earphones which can play music by connecting Bluetooth.

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4 Summary of Test Standards

Test Standards	
FCC Part 15 Subpart C 10-1-2018 Edition	PART 15 - RADIO FREQUENCY DEVICES Subpart C - Intentional Radiators

All the test methods were according to Public Notice DA 00-705 -Frequency Hopper Spread Spectrum Test Procedure released by FCC on March 30, 2000 and C63.10 (2013) and KDB558074 D01 v05r02 DTS Measurement Guidance.

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5 Summary of Test Results

Technical Requirements				
FCC Part 15 Subpart C				
Test Condition		Pages	Test Site	Test Result
§15.207	Conducted emission AC power port	10-11	Site 1	Not Applicable
§15.247(b)(1)	Conducted peak output power	12-17	Site 1	Pass
§15.247(a)(2)	6dB bandwidth	---	---	N/A
§15.247(a)(1)	20dB bandwidth and 99% Occupied Bandwidth	18-27	Site 1	Pass
§15.247(a)(1)	Carrier frequency separation	28-30	Site 1	Pass
§15.247(a)(1)(iii)	Number of hopping frequencies	31-32	Site 1	Pass
§15.247(a)(1)(iii)	Dwell Time	33-35	Site 1	Pass
§15.247(e)	Power spectral density*	---	---	N/A
§15.247(d)	Spurious RF conducted emissions	36-39	Site 1	Pass
§15.247(d)	Band edge	40-46	Site 1	Pass
§15.247(d) & §15.209 &	Spurious radiated emissions for transmitter	47-48	Site 1	Pass
§15.203	Antenna requirement	See note 2		Pass

Note 1: N/A=Not Applicable.
Note 2: The EUT uses a PCB antenna, which gain is 0dBi. In accordance to §15.203, It is considered sufficiently to comply with the provisions of this section.

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6 General Remarks

Remarks

This submittal(s) (test report) is intended for FCC ID: 2ART4-BN22, complies with Section 15.209, 15.247 of the FCC Part 15, Subpart C Rules.

SUMMARY:

All tests according to the regulations cited on page 5 were

■ - Performed

☐ - **Not** Performed

The Equipment Under Test

■ - **Fulfills** the general approval requirements.

☐ - **Does not** fulfill the general approval requirements.

Sample Received Date: June 3, 2019

Testing Start Date: June 4, 2019

Testing End Date: June 27, 2019

- TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch -

Reviewed by:	Prepared by:	Tested by:
	Lance Lin	Louise Liu
Reviewer: Tony Liu	Project engineer: Lance Lin	Test engineer: Louise Liu

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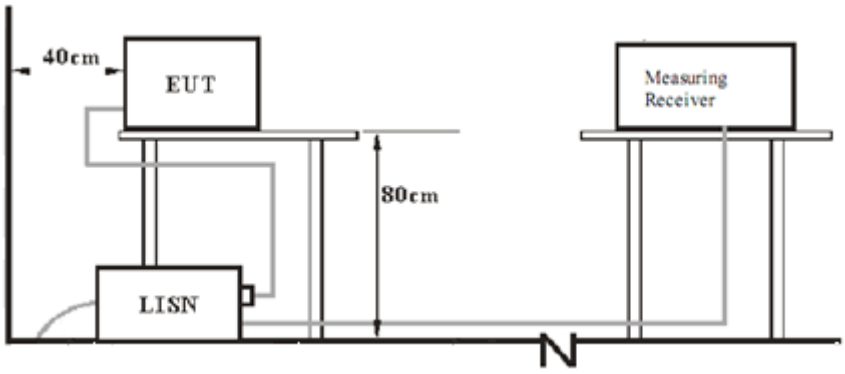
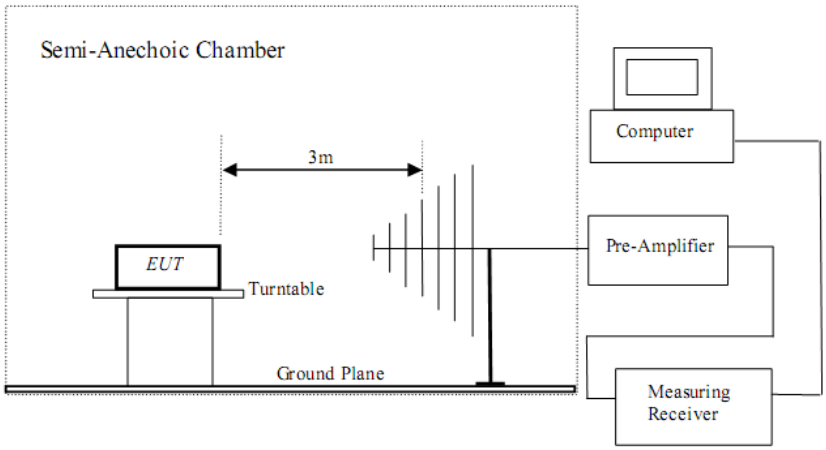
7 Test Setups

7.1 AC Power Line Conducted Emission test setups

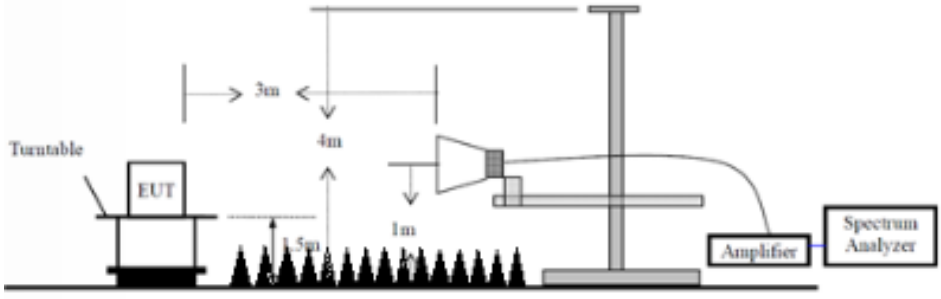


7.2 Radiated test setups

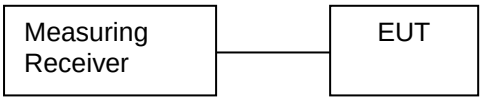
Below 1GHz



Above 1GHz



7.3 Conducted RF test setups



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8 Systems test configuration

Auxiliary Equipment Used during Test:

DESCRIPTION	MANUFACTURER	MODEL NO.(SHIELD)	S/N(LENGTH)
N/A	N/A	N/A	---

Test software: BK32XX RF Test V1.5, which used to control the EUT in continues transmitting mode

The system was configured to hopping mode.

Hopping mode: typical working mode (normal hopping status)

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9 Technical Requirement

9.1 Conducted Emission

Test Method

1. The EUT was placed on a table, which is 0.8m above ground plane
2. The power line of the EUT is connected to the AC mains through a Artificial Mains Network (A.M.N.).
3. Maximum procedure was performed to ensure EUT compliance
4. A EMI test receiver is used to test the emissions from both sides of AC line

Limit

Frequency MHz	QP Limit dBµV	AV Limit dBµV
0.150-0.500	66-56*	56-46*
0.500-5	56	46
5-30	60	50

Decreasing linearly with logarithm of the frequency

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Conducted Emission

Not Applicable

Remark: In charging mode, EUT will disconnect Bluetooth function.

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9.2 Conducted peak output power

Test Method

1. Use the following spectrum analyzer settings:
   Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
   RBW > the 20 dB bandwidth of the emission being measured, VBW≥RBW,
   Sweep = auto, Detector function = peak, Trace = max hold
2. Add a correction factor to the display.
3. Allow the trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission. The indicated level is the peak output power

Limits

Frequency Range MHz	Limit W	Limit dBm
2400-2483.5	≤1	≤30

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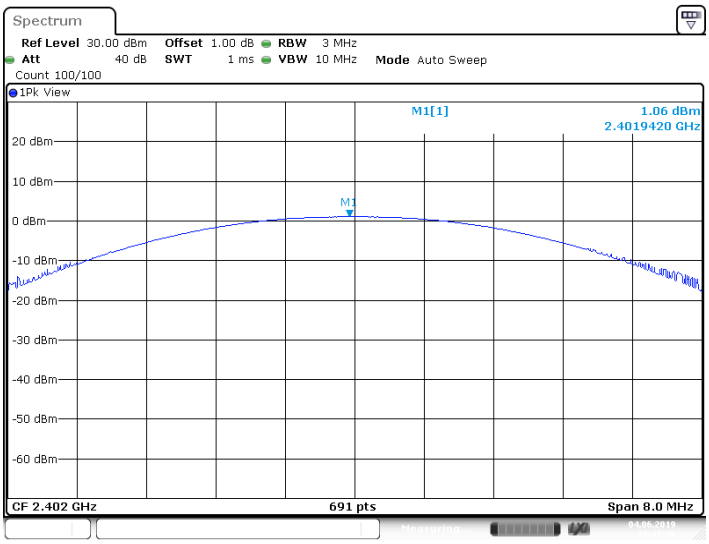
Conducted peak output power

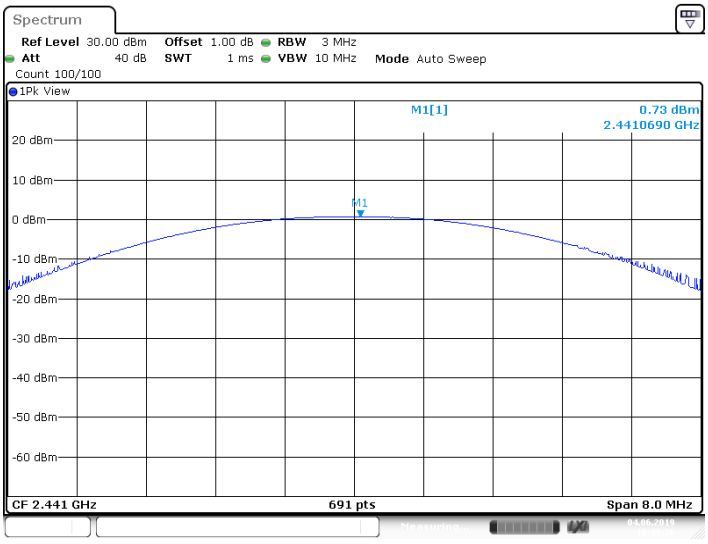
Bluetooth Mode GFSK modulation Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2402MHz	1.06	Pass
Middle channel 2441MHz	0.73	Pass
High channel 2480MHz	- 0.63	Pass

2402MHz



2441MHz



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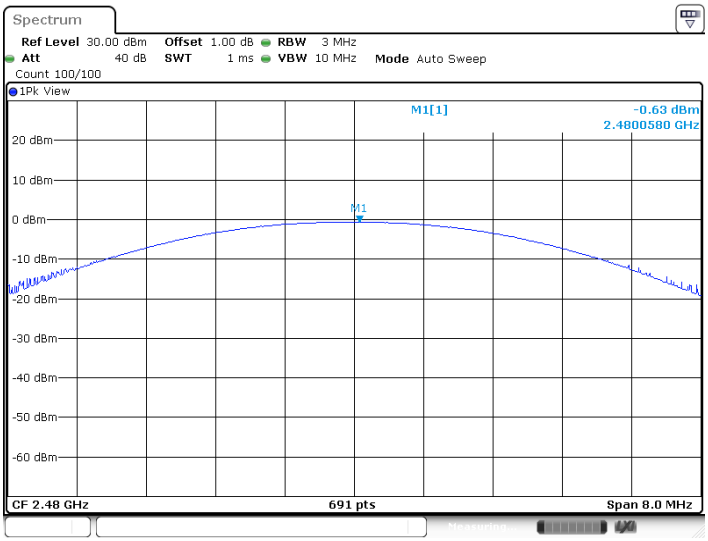
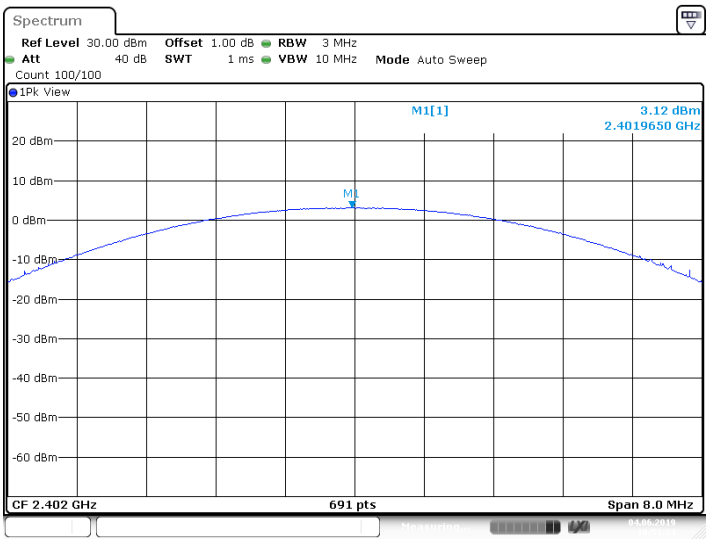
2480MHz



Bluetooth Mode π/4-DQPSK modulation Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2402MHz	3.12	Pass
Middle channel 2441MHz	2.61	Pass
High channel 2480MHz	2.50	Pass

2402MHz



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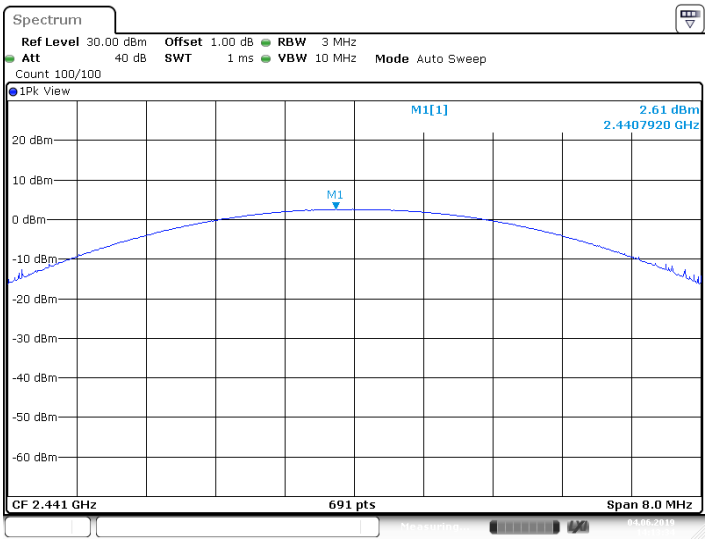
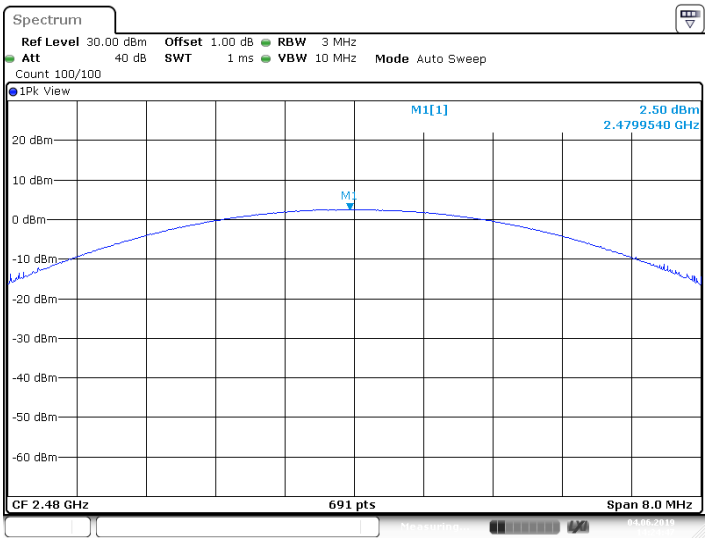
2441MHz



2480MHz



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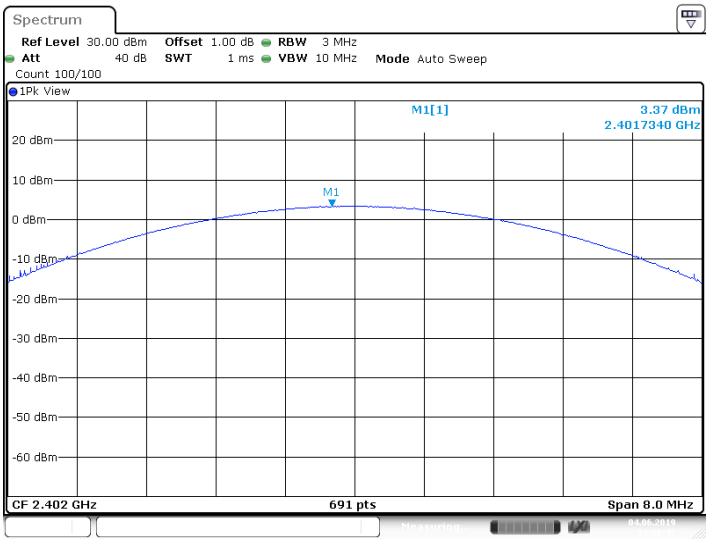
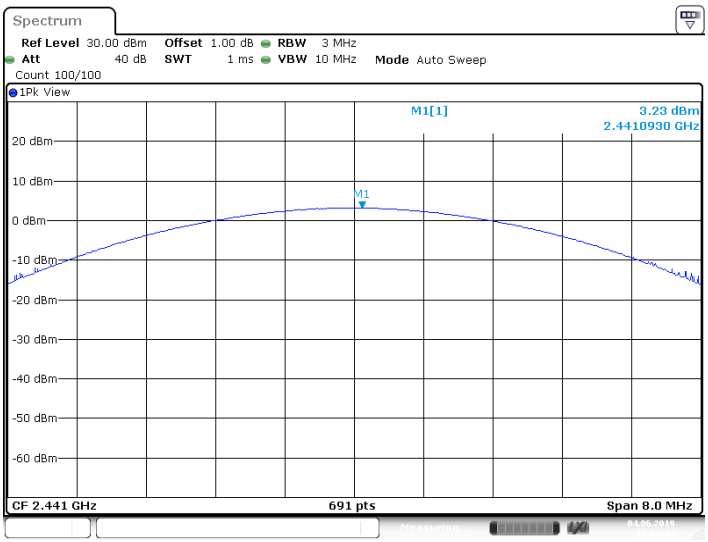
Bluetooth Mode 8DPSK modulation Test Result

Frequency MHz	Conducted Peak Output Power dBm	Result
Low channel 2402MHz	3.37	Pass
Middle channel 2441MHz	3.23	Pass
High channel 2480MHz	3.33	Pass

2402MHz



2441MHz



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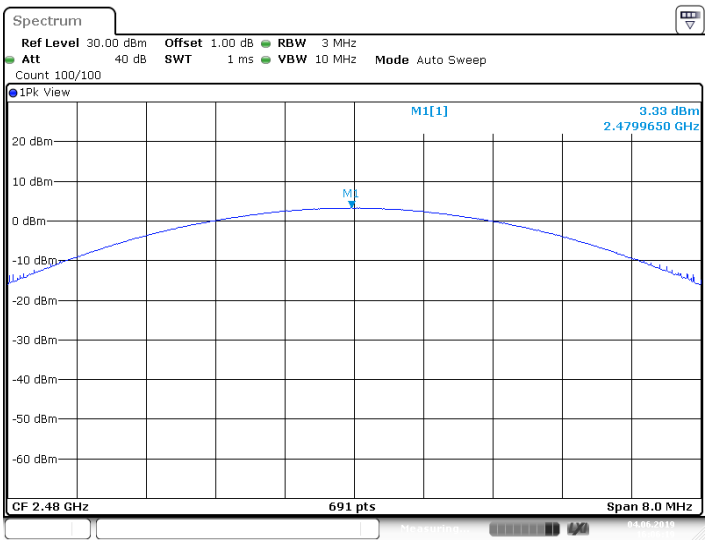
2480MHz



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9.3 20 dB bandwidth and 99% Occupied Bandwidth

Test Method

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Limit

Limit [kHz]
N/A

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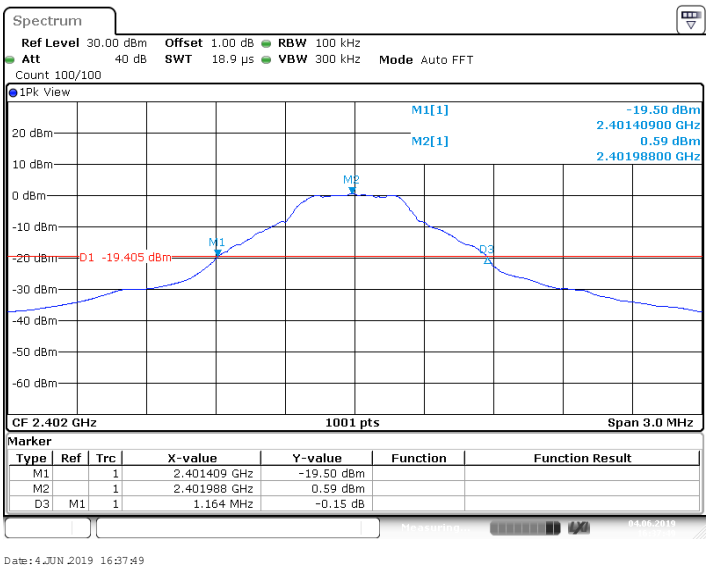
20 dB bandwidth and 99% Occupied Bandwidth

Bluetooth Mode GFSK Modulation test result

Frequency MHz	20 dB Bandwidth kHz	99% Bandwidth kHz	Limit kHz	Result
2402	1164	914	--	Pass
2441	1137	917	--	Pass
2480	1143	917	--	Pass

20db Bandwidth

2402MHz



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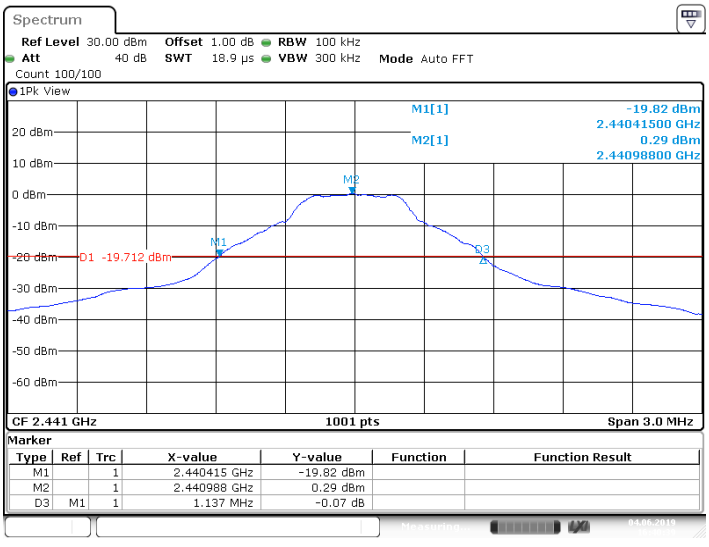
2441MHz



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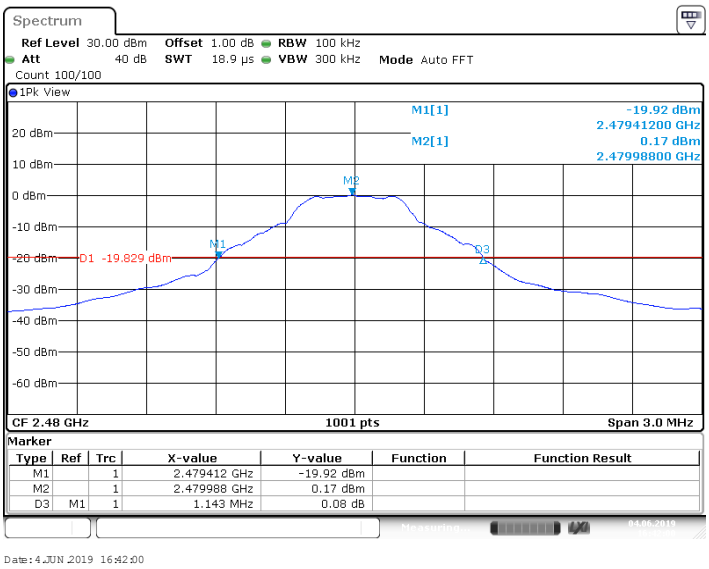
2480MHz



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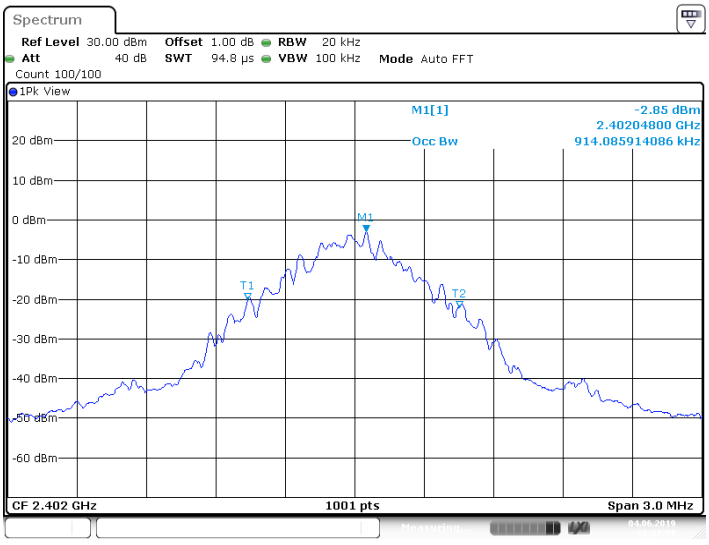
99% Bandwidth

2402MHz



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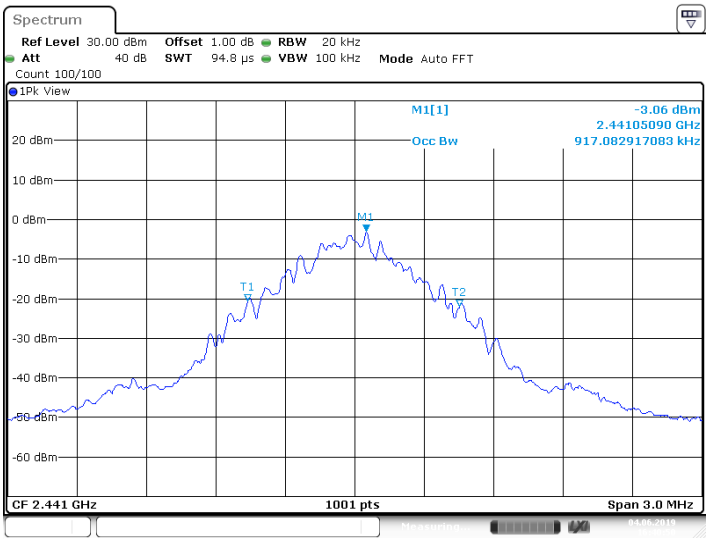
2441MHz



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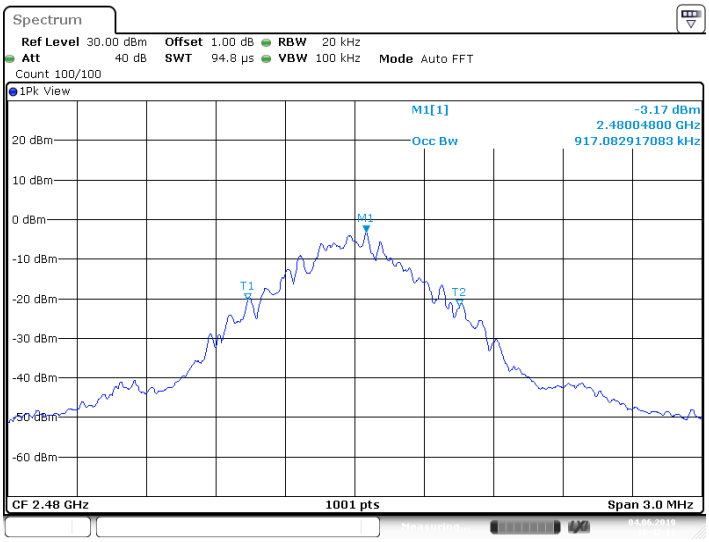
2480MHz



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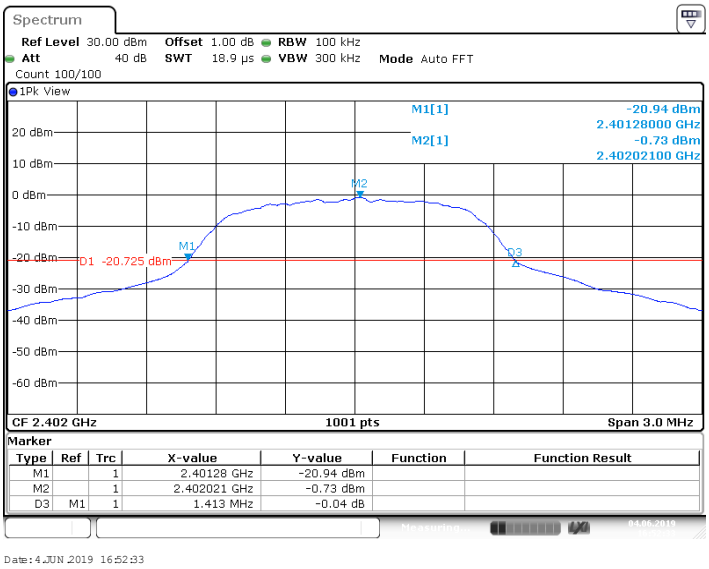
Bluetooth Mode π/4-DQPSK Modulation test result

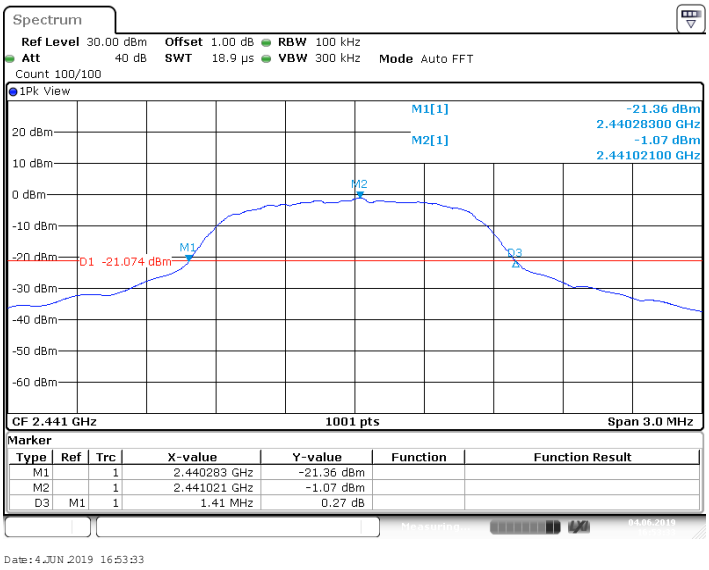
Frequency	20 dB Bandwidth	99% Bandwidth	Limit	Result
MHz	kHz	kHz	kHz	
2402	1413	1202	--	Pass
2441	1410	1202	--	Pass
2480	1410	1205	--	Pass

20db Bandwidth

2402MHz



2441MHz



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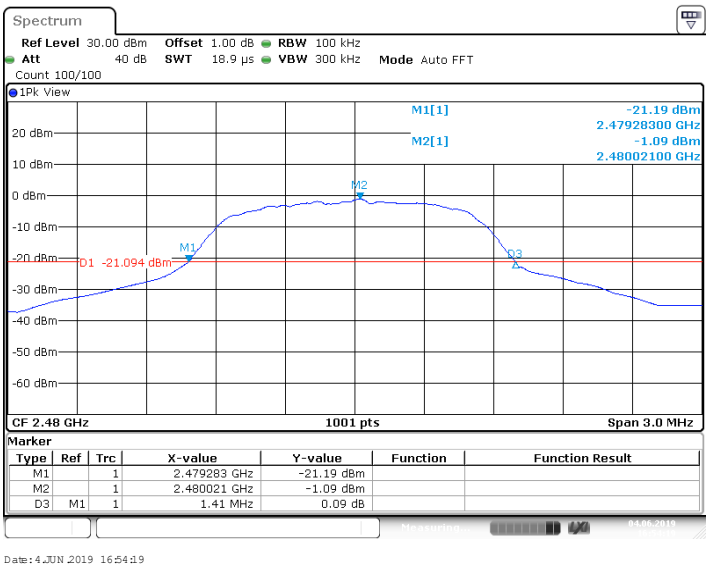
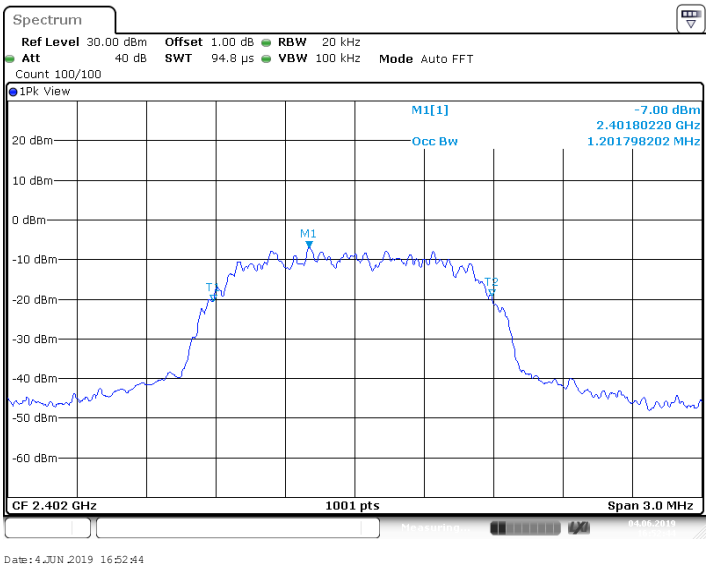
2480MHz



99% Bandwidth

2402MHz



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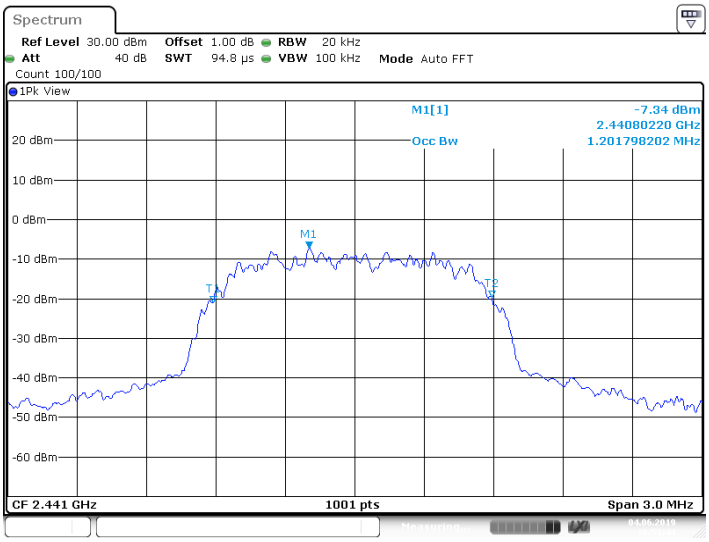
2441MHz



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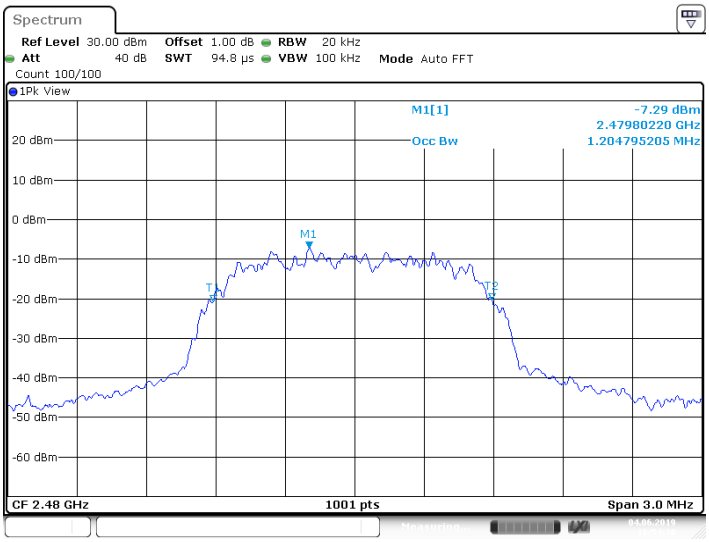

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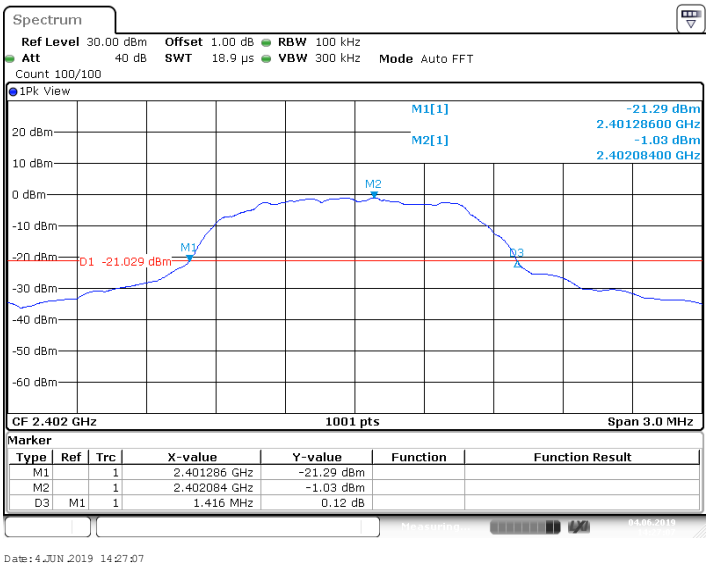
Bluetooth Mode 8DPSK Modulation test result

Frequency	20 dB Bandwidth	99% Bandwidth	Limit	Result
MHz	kHz	kHz	kHz	
2402	1416	1211	--	Pass
2441	1422	1208	--	Pass
2480	1419	1211	--	Pass

20db Bandwidth

2402MHz



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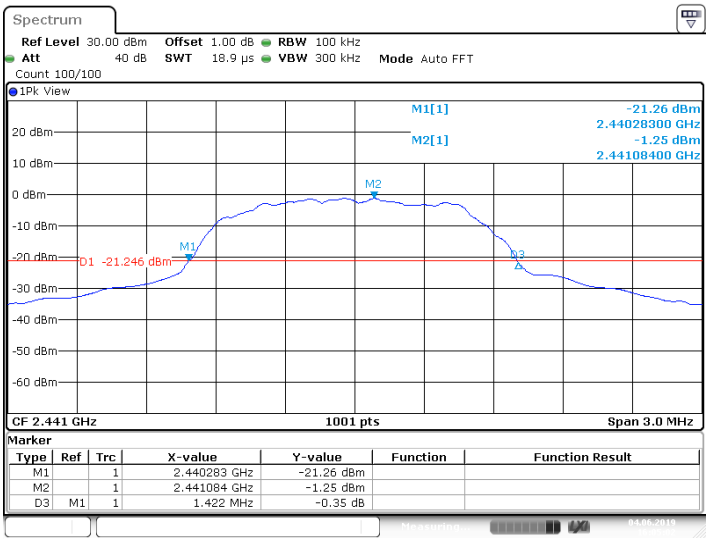
2441MHz



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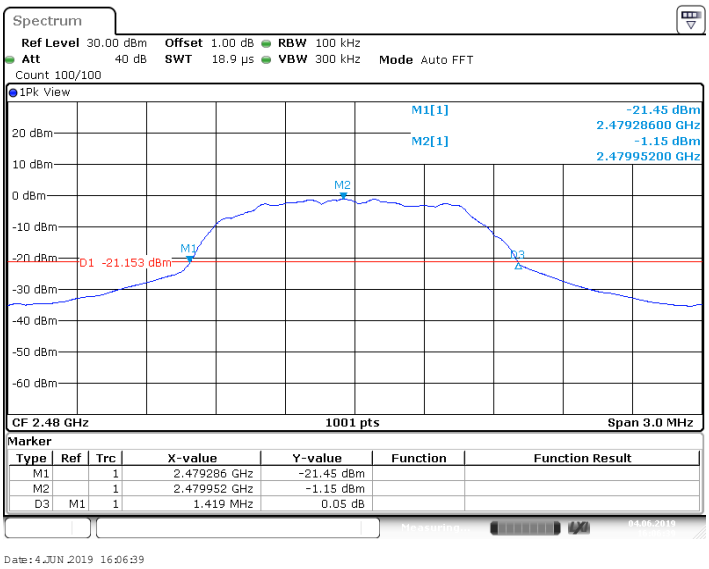
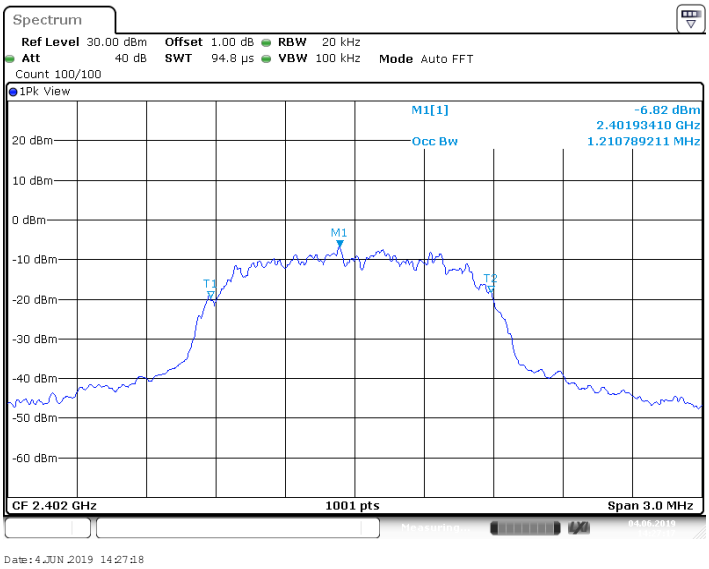
2480MHz



99% Bandwidth

2402MHz



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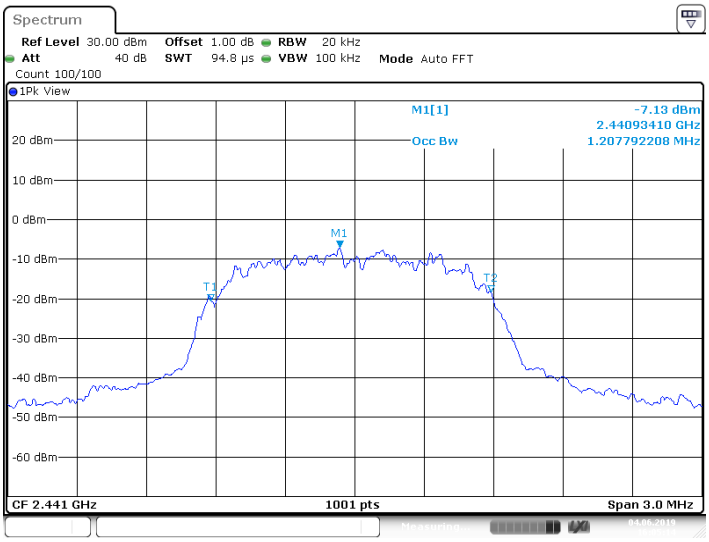
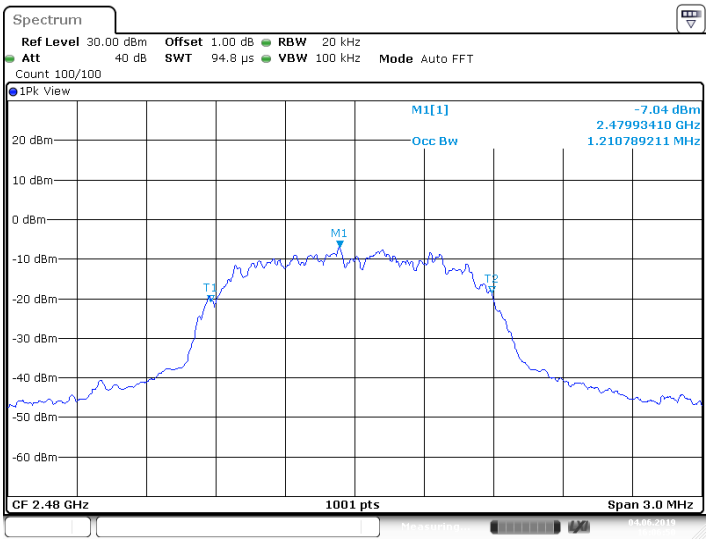
2441MHz



2480MHz



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9.4 Carrier Frequency Separation

Test Method

1. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peaks of two adjacent channels, RBW ≥ 1% of the span, VBW) ≥RBW, Sweep = auto, Detector function = peak
2. By using the Max-Hold function record the separation of two adjacent channels.
3. Measure the frequency difference of these two adjacent channels by spectrum analyzer marker function.
4. Repeat above procedures until all frequencies measured were complete.

Limit

Limit kHz
⩾25KHz or 2/3 of the 20 dB bandwidth which is greater

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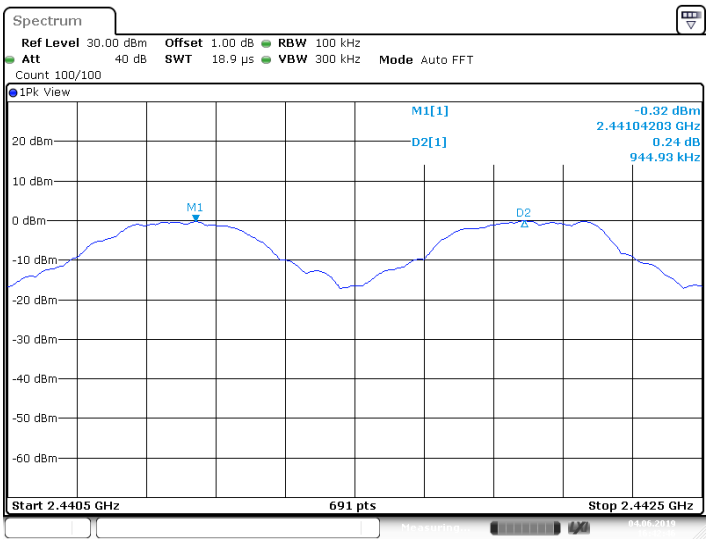
Carrier Frequency Separation

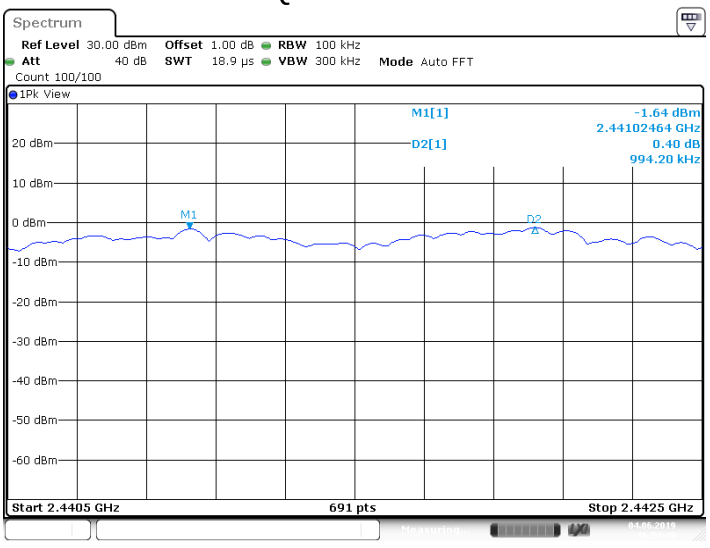
Test result: The measurement was performed with the typical configuration (normal hopping status).

Modulation	Carrier Frequency Separation kHz	Result
GFSK	945	Pass
π/4-DQPSK	994	Pass
8DPSK	965	Pass

GFSK Modulation



π/4-DQPSK Modulation



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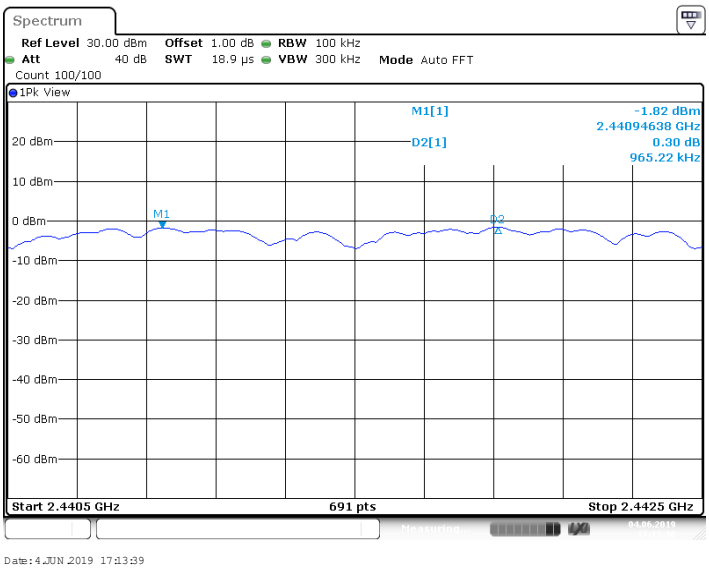
8DPSK Modulation



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9.5 Number of hopping frequencies

Test Method

1. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peaks of two adjacent channels, RBW ≥ 1% of the span, VBW) ≥RBW, Sweep = auto, Detector function = peak
2. Set the spectrum analyzer on Max-Hold Mode, and then keep the EUT in hopping mode.
3. Record all the signals from each channel until each one has been recorded.
4. Repeat above procedures until all frequencies measured were complete.

Limit

Limit number
⩾ 15

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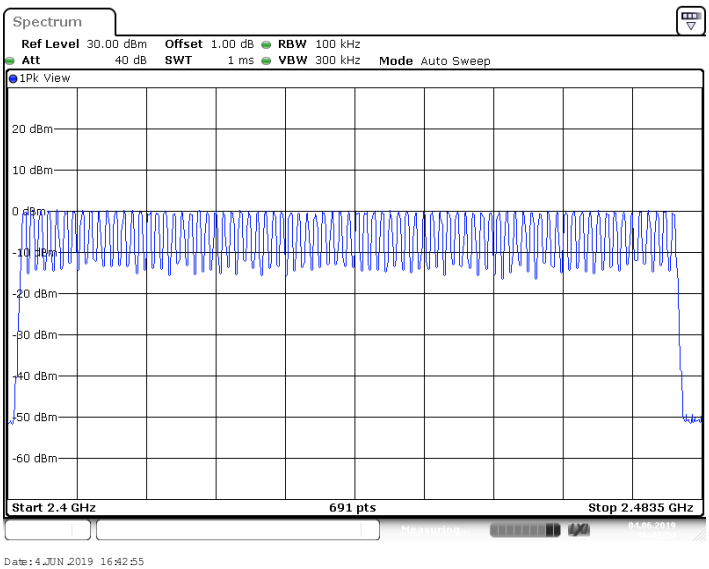
Number of hopping frequencies

Test result: The measurement was performed with the typical configuration (normal hopping status), and the total hopping channels is constant for the all modulation mode according with the Bluetooth Core Specification. Here GFSK modulation mode was used to show compliance.

Number of hopping frequencies	Result
79	Pass



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9.6 Dwell Time

Test Method

1. Connect EUT antenna terminal to the spectrum analyzer with a low loss cable. Equipment mode: Spectrum analyzer
2. RBW: 1MHz; VBW: 1MHz; SPAN: Zero Span
3. Adjust the center frequency of spectrum analyzer on any frequency be measured.
4. Measure the Dwell Time by spectrum analyzer Marker function.
5. Repeat above procedures until all frequencies measured were complete.

Limit

The average time of occupancy on any frequency shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

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Dwell Time

Dwell time

The maximum dwell time shall be 0,4 s.
According to the Bluetooth Core Specification, the worse result (DH5 mode) was reported to show compliance.

The Dwell Time = Burst Width * Total Hops. The detailed calculations are showed as follows:
The duration for dwell time calculation: 0.4 [s] * hopping number = 0.4 [s] * 79 [ch] = 31.6 [s*ch];

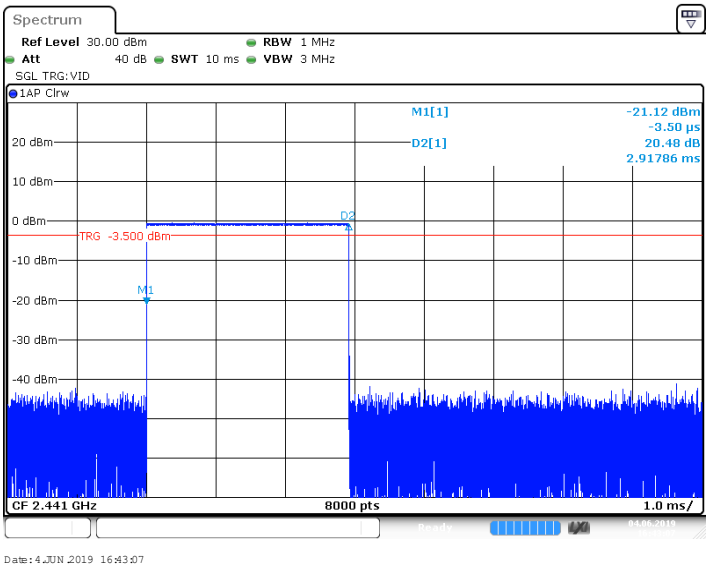
The burst width, which is directly measured, refers to the duration on one channel hop.

Test Result

Modulation	Mode	Reading (ms)	Total Hops	Test Result (ms)	Limit (ms)	Result
GFSK	DH5	2.92	110	321	< 400	Pass
π/4-DQPSK	2DH5	2.91	110	320	< 400	Pass
8DPSK	3DH5	2.91	110	320	< 400	Pass

GFSK Modulation

DH5



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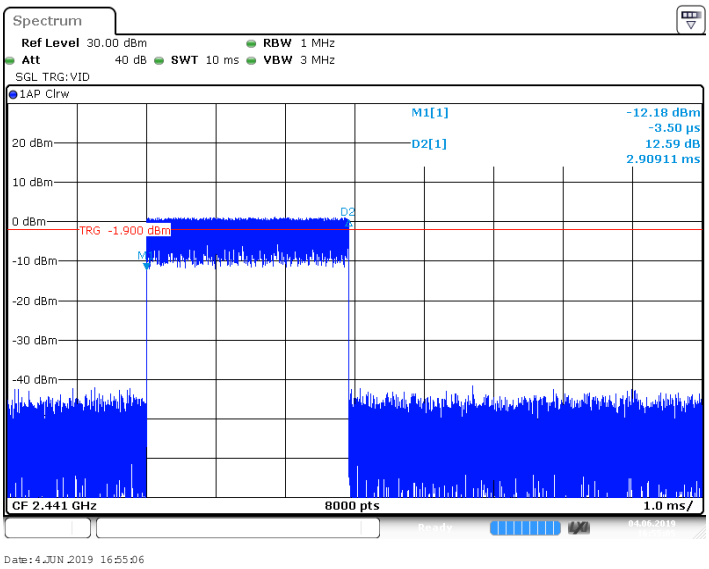
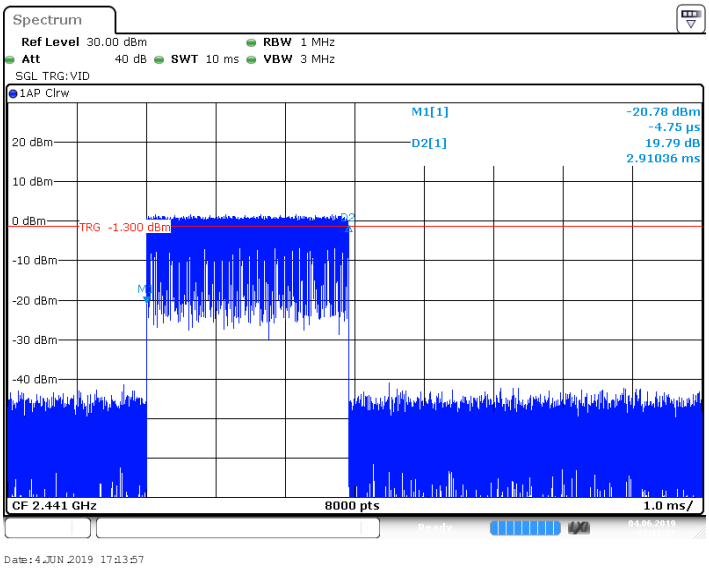
π/4-DQPSK Modulation

2DH5



8DPSK Modulation

3DH5



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9.7 Spurious RF conducted emissions

Test Method

1. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peak level of the in-band emission and all spurious emissions (e.g., harmonics) from the lowest frequency generated in the EUT up through the 10th harmonic. Typically, several plots are required to cover this entire span.
   RBW = 100 kHz, VBW≥RBW, Sweep = auto, Detector function = peak, Trace = max hold
2. Allow the trace to stabilize. Set the marker on the peak of any spurious emission recorded.
3. The level displayed must comply with the limit specified in this Section. Submit these plots.
4. Repeat above procedures until all frequencies measured were complete.

Limit

In any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz 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. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

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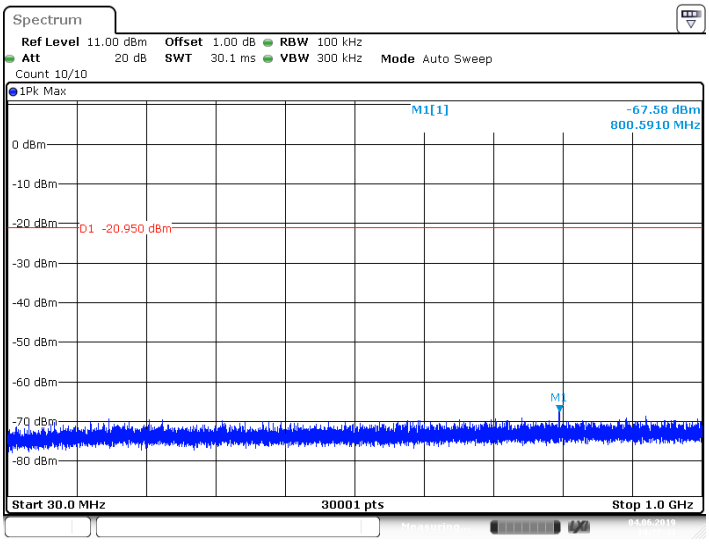
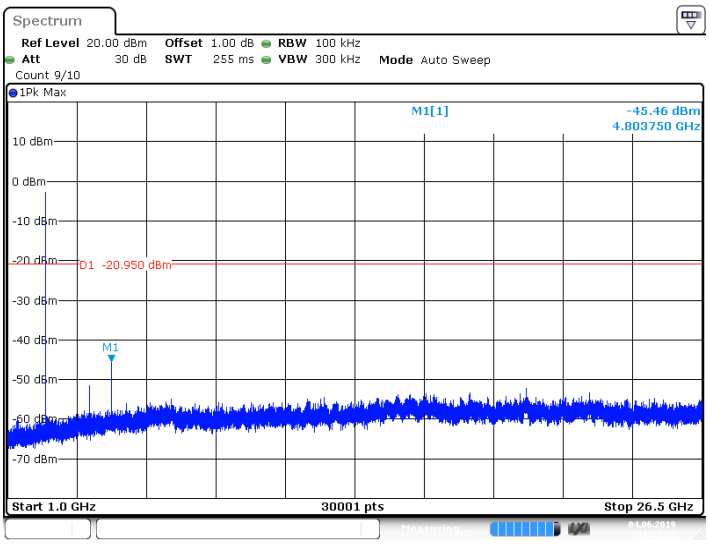
Spurious RF conducted emissions

Only the worse case (which is subject to the maximum EIRP, 8DPSK mode) test result is listed in the report.

2402MHz





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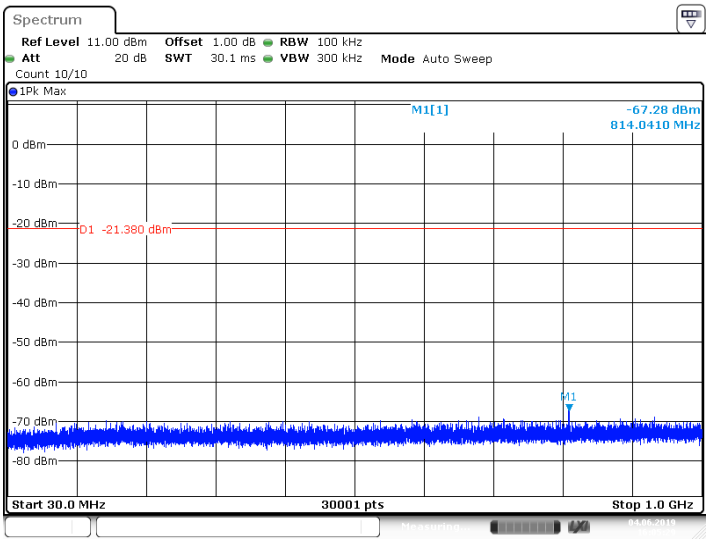
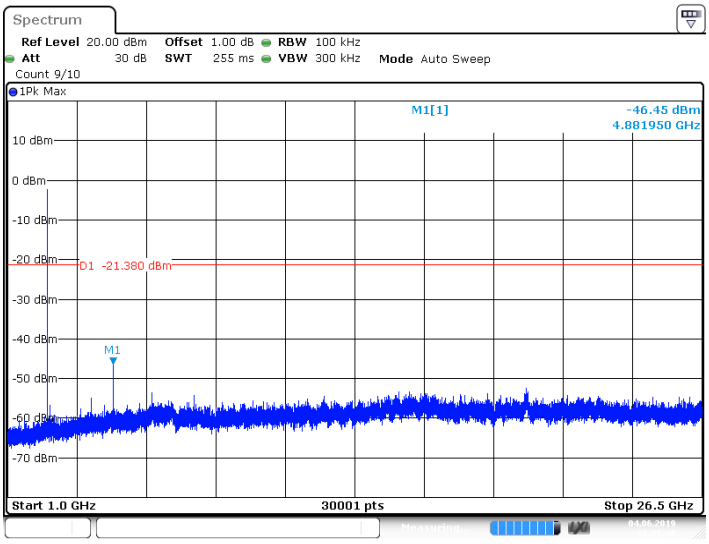
2441MHz





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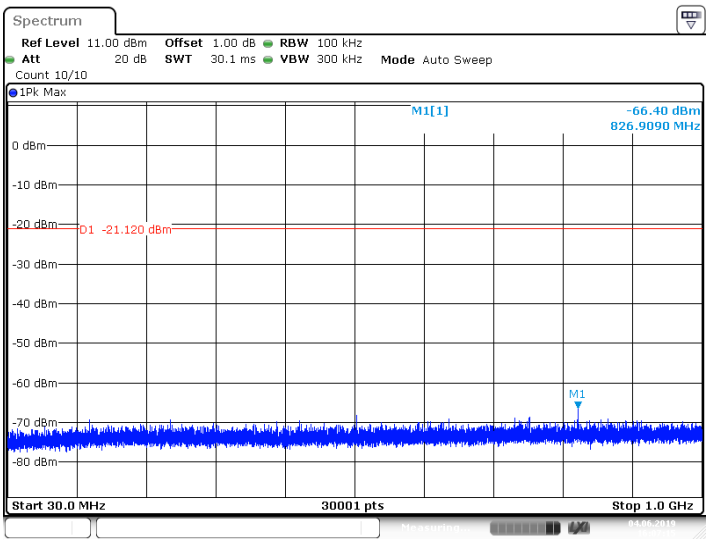
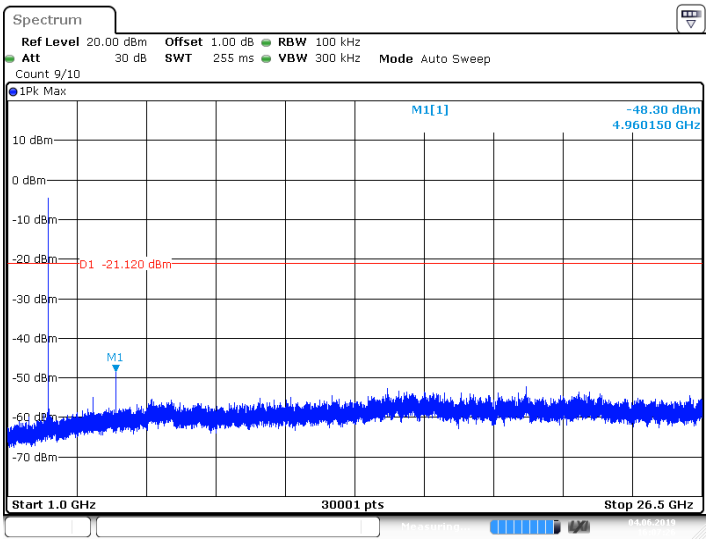
2480MHz





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9.8 Band edge testing

Test Method

1 Use the following spectrum analyzer settings:
Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 kHz, VBW≥RBW, Sweep = auto, Detector function = peak, Trace = max hold
2 Allow the trace to stabilize, use the peak and delta measurement to record the result.
3 The level displayed must comply with the limit specified in this Section. .
4 Repeat the test at the hopping off and hopping on mode, submit all the plots.

Limit:

In any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz 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. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

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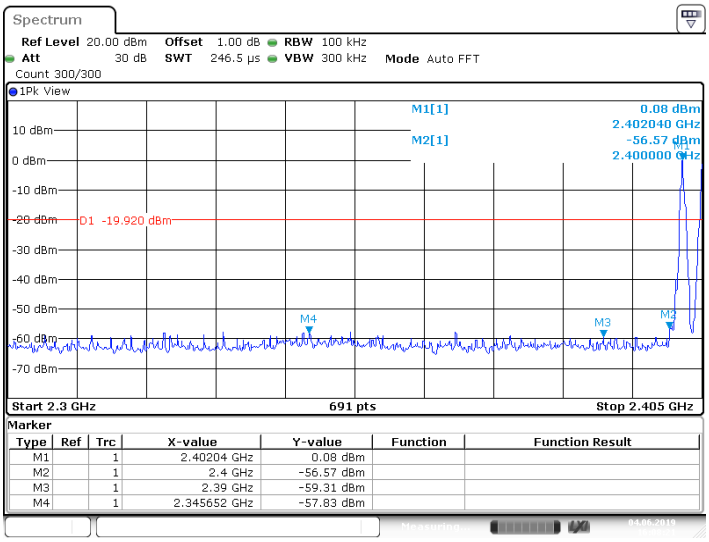
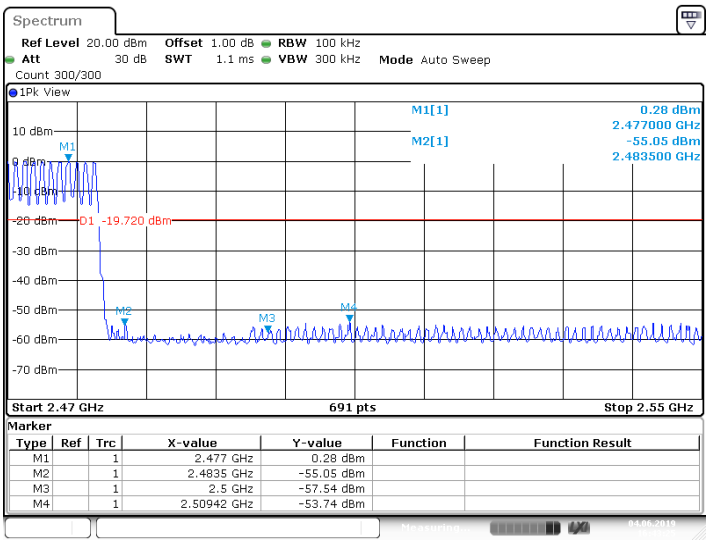
Band edge testing

GFSK Modulation Test Result:
Hopping on mode:





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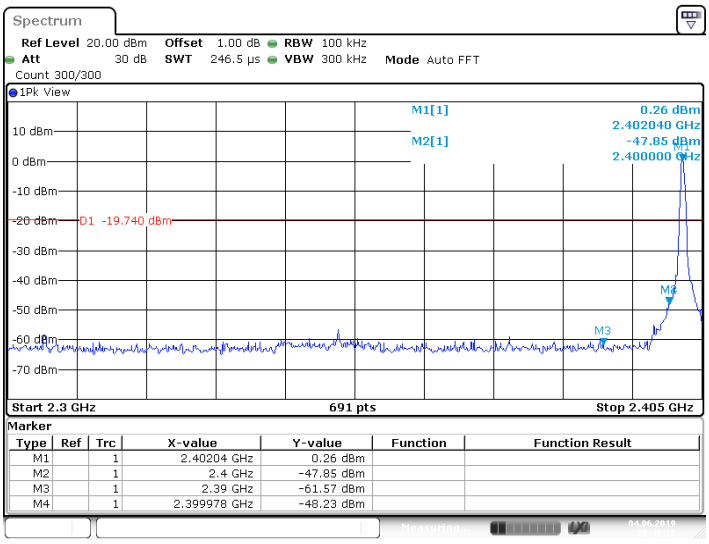
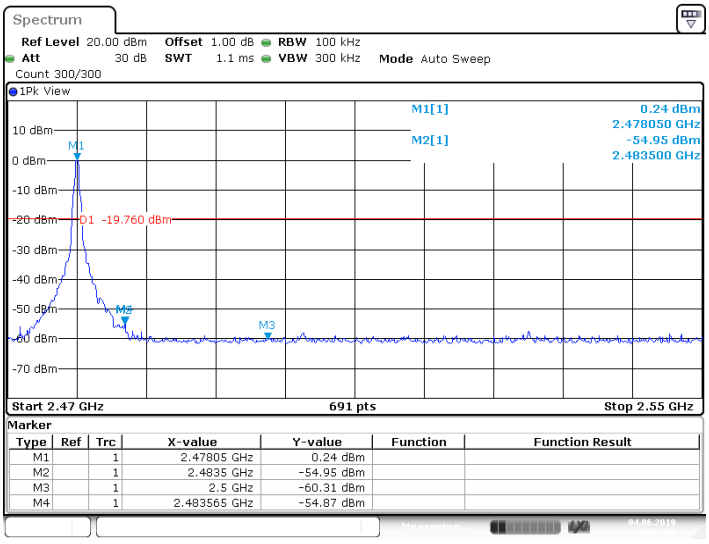
Hopping off mode:





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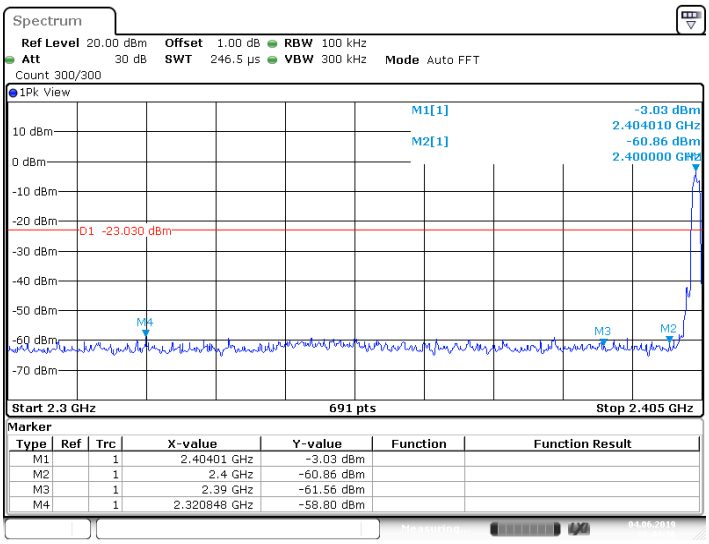
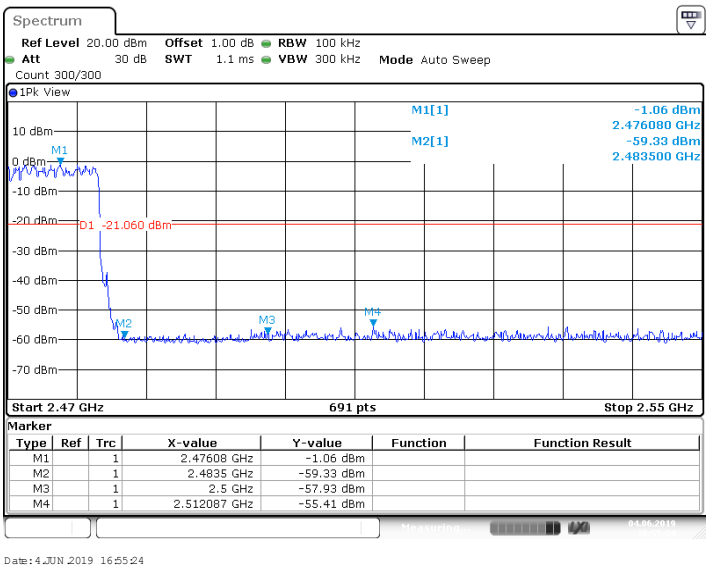
π/4-DQPSK Modulation Test Result:
Hopping on mode:





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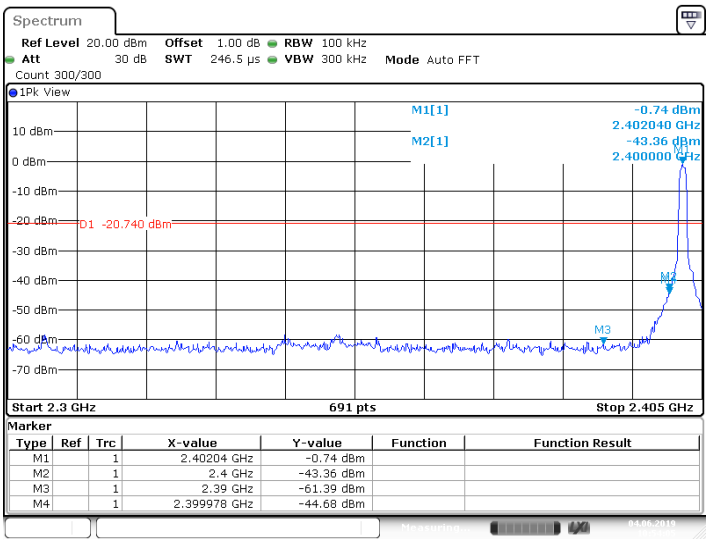
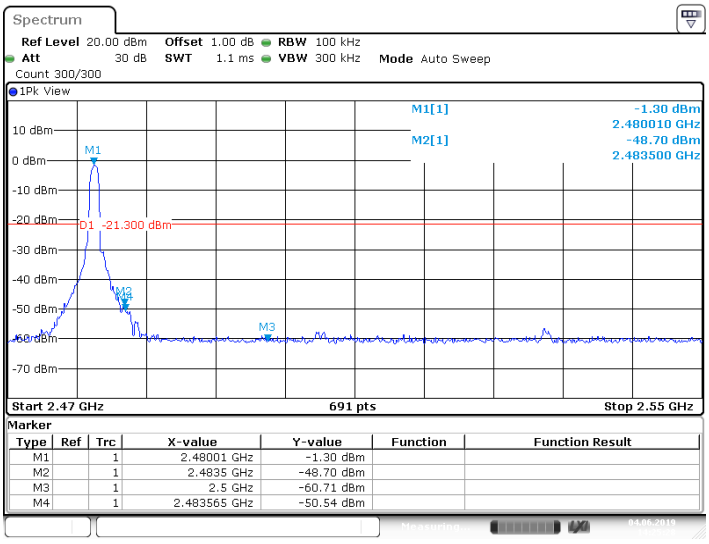
Hopping off mode:





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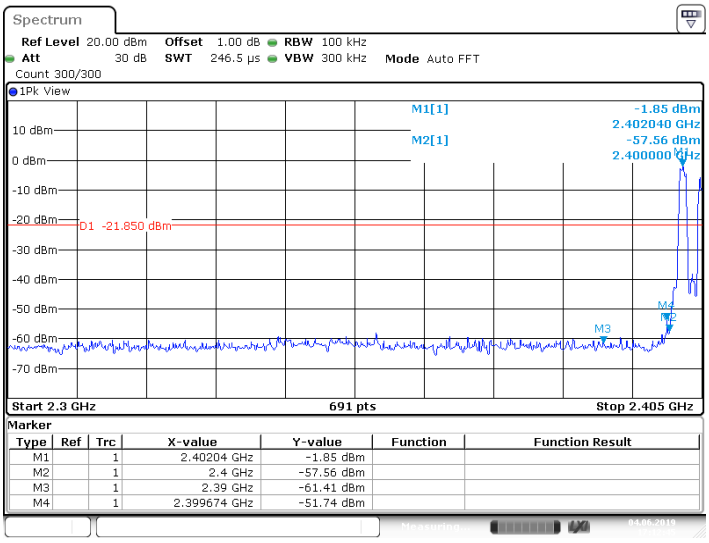
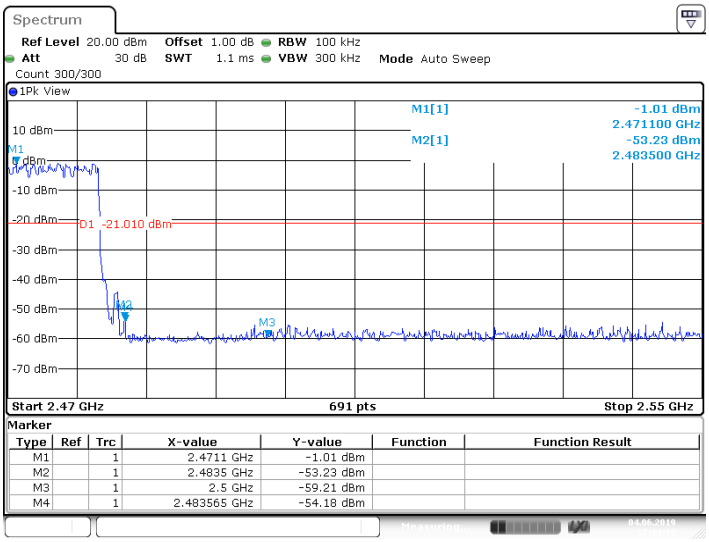
8DPSK Modulation Test Result:
Hopping on mode:





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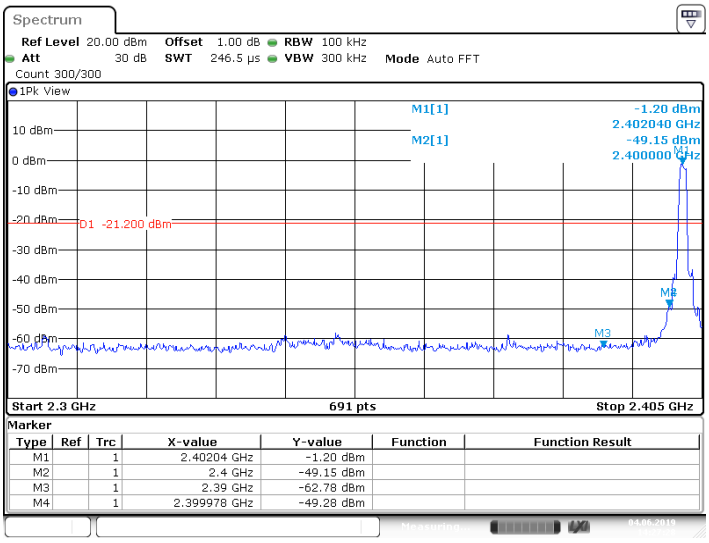
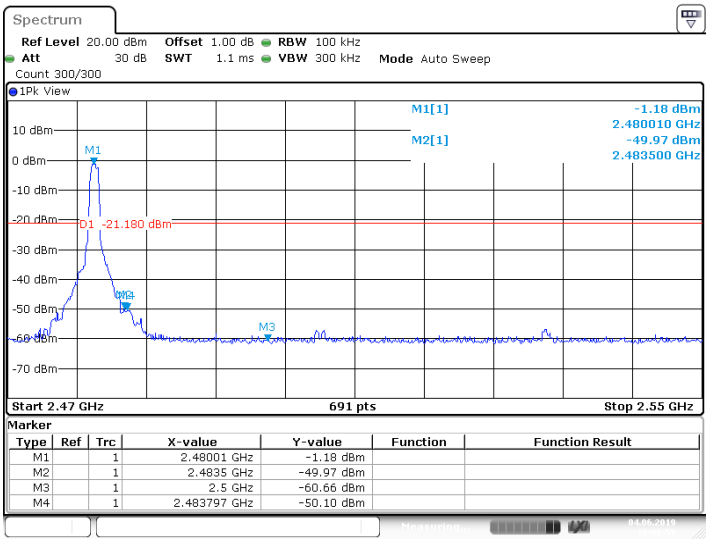
Hopping off mode:



Date: 4.JUN.2019 14:27:28



Date: 4.JUN.2019 16:07:00

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9.9 Spurious radiated emissions for transmitter

Test Method

1: The EUT was place on a turn table which is 1.5m above ground plane for above 1GHz and 0.8m above ground for below 1GHz at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

2: The EUT was set 3 meters away from the interference – receiving antenna, which was mounted on the top of a variable – height antenna tower.

3: The height of antenna 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.

4: 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

5: Use the following spectrum analyzer settings According to C63.10:

For Below 1GHz

Use the following spectrum analyzer settings:

Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 100 KHz to 120KHz, VBW≥RBW for peak measurement, Sweep = auto,
Detector function = peak, Trace = max hold.

For Peak unwanted emissions Above 1GHz:

Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 1MHz, VBW≥RBW for peak measurement ,Sweep = auto,
Detector function = peak, Trace = max hold.

Procedures for average unwanted emissions measurements above 1000 MHz:

Span = wide enough to capture the peak level of the in-band emission and all spurious
RBW = 1MHz, VBW=10Hz, Sweep = auto, Detector function = peak, Trace = max hold.
If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from 20log(dwell time/100 ms), in an effort to demonstrate compliance with the 15.209 limit.

If the emission is pulsed, modify the unit for continuous operation; use the settings shown above, then correct the reading by subtracting the peak-average correct factor, derived from the appropriate the duty cycle calculation.

The setting method can refer to DA00-705.

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Limit

The radio emission outside the operating frequency band shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power. Radiated emissions which fall in the restricted bands, as defined in section15.205, must comply with the radiated emission limits specified in section 15.209.

Frequency MHz	Field Strength uV/m	Field Strength dBµV/m	Detector
30-88	100	40	QP
88-216	150	43.5	QP
216-960	200	46	QP
960-1000	500	54	QP
Above 1000	500	54	AV
Above 1000	5000	74	PK

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Spurious radiated emissions for transmitter

According to C63.10, if the peak (or quasi-peak) measured value complies with the average limit, it is unnecessary to perform an average measurement, so AV emission value did not show in below table if the peak value complies with average limit.

The only worse case (which is subject to the maximum EIRP, 8DPSK mode) test result is listed in the report.

Transmitting spurious emission test result as below:

Below 1GHz

Frequency Band	Frequency	Emission Level	Polarization	Limit	Detector	Margin	Correct factor	Result
	MHz	dBuV/m		dBµV/m		dB	(dB)	
30-1000MHz	51.447778	21.68	H	40.00	QP	18.32	-24.5	Pass
	106.737778	18.66	H	43.50	QP	24.84	-27.7	Pass
	231.059444	23.18	H	46.00	QP	22.82	-23.7	Pass
	49.723333	20.58	V	40.00	QP	19.42	-24.7	Pass
	223.461111	23.47	V	46.00	QP	22.53	-24.0	Pass
	873.738333	37.09	V	46.00	QP	8.91	-16.0	Pass

Above 1GHZ

Low channel 2402MHz Test Result

Frequency Band	Frequency	Emission Level	Polarization	Limit	Detector	Margin	Correct factor	Result
	MHz	dBuV/m		dBµV/m		dB	(dB)	
1000-25000MHz	2453.875000	38.56	H	74	PK	35.44	-5.6	Pass
	2497.937500*	43.30	H	74	PK	30.70	-5.1	Pass
	7464.843750*	37.91	H	74	PK	36.09	6.1	Pass
	13163.906250	44.97	H	74	PK	29.03	13.9	Pass
	2255.562500*	31.76	V	74	PK	42.24	-7.1	Pass
	2498.125000*	35.69	V	74	PK	38.31	-5.1	Pass
	9549.375000	41.01	V	74	PK	32.99	93.0	Pass
	13085.156250	42.73	V	74	PK	31.27	330.0	Pass

Middle channel 2441MHz Test Result

Frequency Band	Frequency	Emission Level	Polarization	Limit	Detector	Margin	Correct factor	Result
	MHz	dBuV/m		dBµV/m		dB	(dB)	
1000-25000MHz	2492.812500*	36.82	H	74	PK	37.18	-5.1	Pass
	4882.031250*	52.44	H	54	PK	1.56	2.9	Pass
	7467.187500*	37.67	H	74	PK	36.33	6.1	Pass
	9474.843750*	40.15	H	74	PK	33.85	9.1	Pass
	2266.250000	37.45	V	74	PK	36.55	-7.0	Pass
	2392.562500	37.27	V	74	PK	36.73	-6.0	Pass
	4960.312500*	46.94	V	74	PK	27.06	3.3	Pass
	17675.156250	49.26	V	74	PK	24.74	21.3	Pass

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5F, Communication Building,163 Pingyun Rd, Huangpu Ave. West Guangzhou, P.R.China TEL: +86 20 3832 0668 FAX: +86 20 3832 0478

High channel 2480MHz Test Result

Frequency Band	Frequency	Emission Level	Polarization	Limit	Detector	Margin	Correct factor	Result
	MHz	dBuV/m		dBμV/m		dB	(dB)	
1000-25000MHz	2532.062500	36.32	H	74	PK	37.68	-5.0	Pass
	2576.125000	36.99	H	74	PK	37.01	-4.9	Pass
	7446.562500*	38.68	H	74	PK	35.32	6.0	Pass
	17885.156250*	49.30	H	74	PK	24.70	21.4	Pass
	2298.250000*	34.86	V	74	PK	39.14	-6.8	Pass
	2397.312500*	36.41	V	74	PK	37.59	-6.0	Pass
	7056.562500	38.10	V	74	PK	35.90	5.9	Pass
	17824.687500*	49.42	V	74	PK	24.58	21.4	Pass

Remark:

(1) "*" means the emission(s) appear within the restrict bands shall follow the requirement of section 15.205.

(2) Data of measurement within this frequency range shown "--" in the table above means the reading of emissions are the noise floor or attenuated more than 10dB below the permissible limits or the field strength is too small to be measured.

(3) Level=Reading Level + Correction Factor
Above 1GHz: Corrector factor = Antenna Factor + Cable Loss- Amplifier Gain
Below 1GHz: Corrector factor = Antenna Factor + Cable Loss
(The Reading Level is recorded by software which is not shown in the sheet)

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10 Test Equipment List

List of Test Instruments

	DESCRIPTION	MANUFACTURER	MODEL NO.	SERIAL NO.	CAL. DUE DATE
CE	EMI Test Receiver	Rohde & Schwarz	ESR 3	101782	2019-7-6
	LISN	Rohde & Schwarz	ENV4200	100249	2019-7-6
	LISN	Rohde & Schwarz	ENV216	100326	2019-7-6
	ISN	Rohde & Schwarz	ENY81	100177	2019-7-6
	ISN	Rohde & Schwarz	ENY81-CAT6	101664	2019-7-6
	High Voltage Proble	Rohde & Schwarz	TK9420(VT9420)	9420-584	2019-6-30
	RF Current probe	Rohde & Schwarz	EZ-17	100816	2019-6-30
C	Signal Generator	Rohde & Schwarz	SMB100A	108272	2019-7-6
	Signal Analyzer	Rohde & Schwarz	FSV40	101030	2019-7-6
	Vector Signal Generator	Rohde & Schwarz	SMU 200A	105324	2019-7-6
	RF Switch Module	Rohde & Schwarz	OSP120/OSP-B157	101226/100851	2019-7-6
RE	EMI Test Receiver	Rohde & Schwarz	ESR 26	101269	2019-7-6
	Trilog Super Broadband Test Antenna	Schwarzbeck	VULB 9163	707	2019-6-28
	Horn Antenna	Rohde & Schwarz	HF907	102294	2019-6-28
	Pre-amplifier	Rohde & Schwarz	SCU 18	102230	2019-7-6
	3m Semi-anechoic chamber	TDK	9X6X6	----	2020-7-7
	EMI Test Receiver	Rohde & Schwarz	ESU8	100316	2019-10-12
	Trilog Broadband Test Antenna	Schwarzbeck	VULB 9163	9163-462	2019-11-09
	Double Ridged Horn Antenna	R&S	HF907	100276	2019-11-16
	Broad Band Horn Antenna	Schwarzbeck	BBHA 9170	790	2019-10-25
	Pre-amplifier	A.H.	PAM-0118	360	2019-10-12
	Pre-amplifier	TERA-MW	TRLA-0040G35	101303	2019-10-12

C - Conducted RF tests

- Conducted peak output power
- 6dB bandwidth
- 20dB bandwidth and 99% Occupied Bandwidth
- Carrier frequency separation
- Number of hopping frequencies
- Dwell Time
- Spurious RF conducted emissions
- Band edge

RE - Radiated RF tests

- Spurious radiated emissions for transmitter

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11 System Measurement Uncertainty

For a 95% confidence level, the measurement expanded uncertainties for defined systems, in accordance with the recommendations of ISO 17025 were:

System Measurement Uncertainty	
Test Items	**Extended Uncertainty**
Radiated Spurious Emission 25MHz-3000MHz	**Horizontal: 4.80dB; Vertical: 4.87dB;**
Radiated Spurious Emission 3000MHz-18000MHz	**Horizontal: 4.59dB; Vertical: 4.58dB;**
Radiated Spurious Emission 18000MHz-40000MHz	**Horizontal: 5.05dB; Vertical: 5.04dB;**
Conducted RF test with TS 8997	**RF Power Conducted: 1.16dB Frequency test involved: 0.6×10-7 or 1%**

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