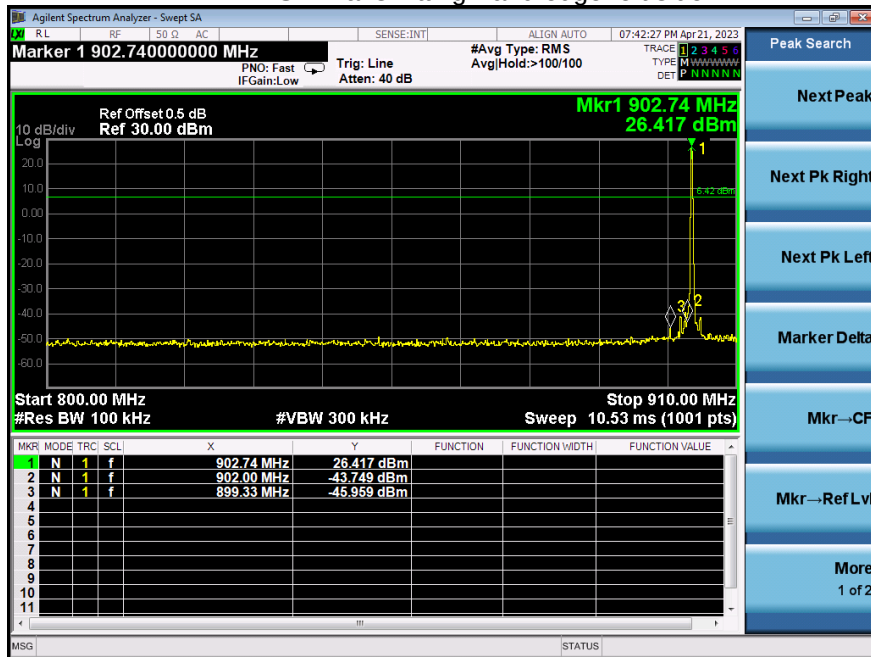
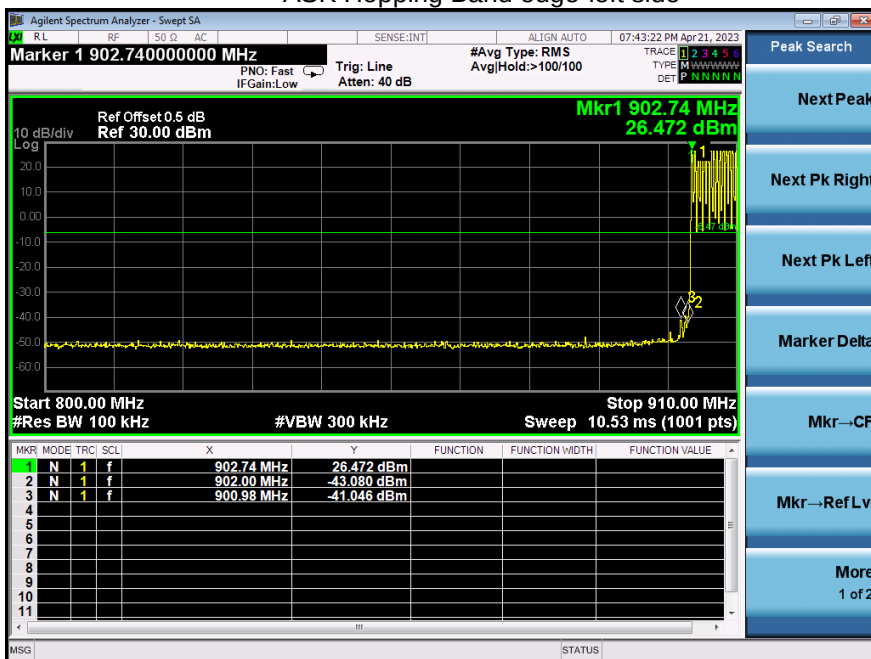
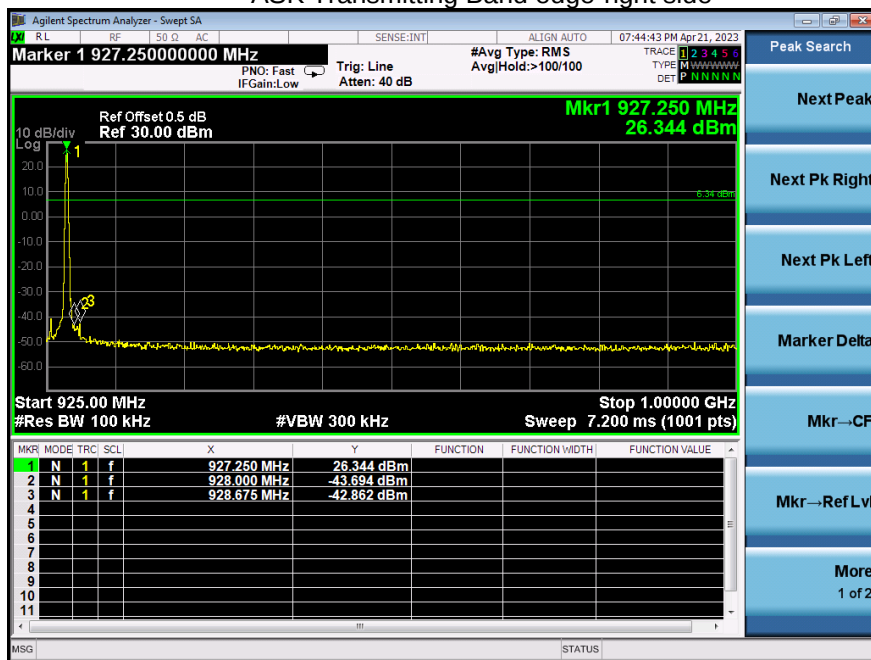
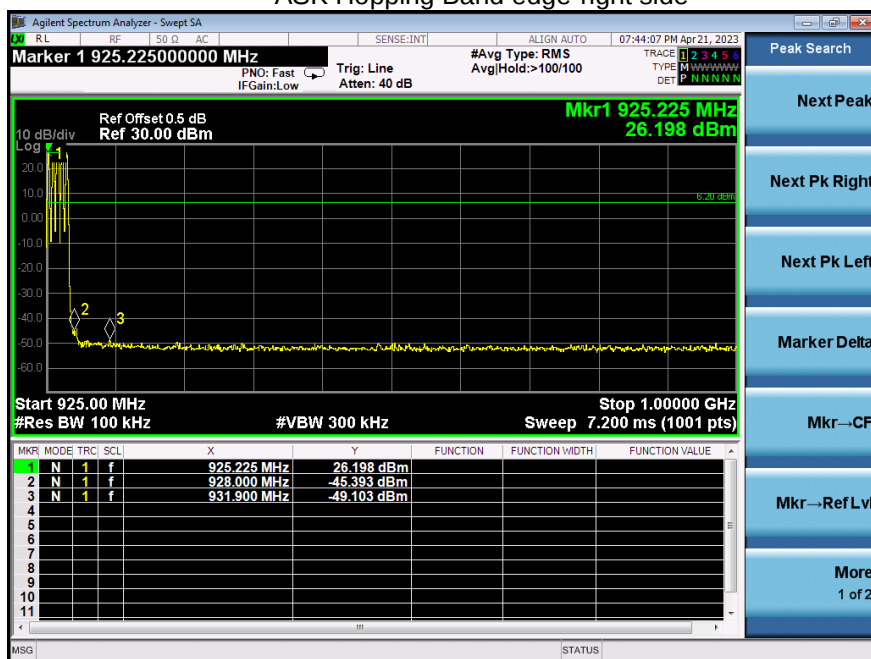


Antenna4
ASK Transmitting Band edge-left side

ASK Hopping Band edge-left side


ASK Transmitting Band edge-right side



ASK Hopping Band edge-right side



10. Occupy Bandwidth

10.1 Block Diagram Of Test Setup



10.2 Limit

For frequency hopping systems operating in the 902-928 MHz band: The maximum allowed 20 dB bandwidth of the hopping channel is 250 kHz

10.3 Test procedure

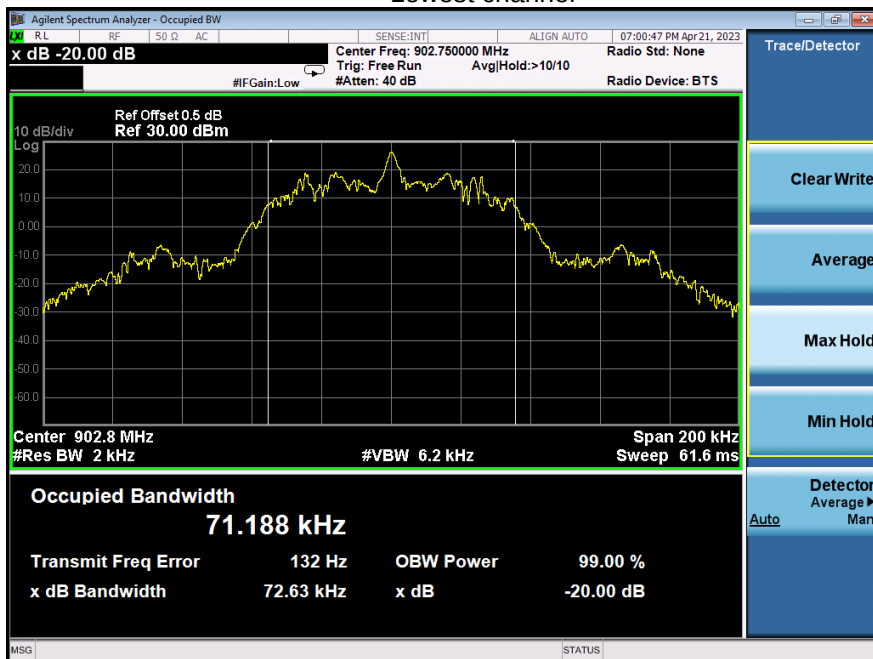
1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings for 20dB Bandwidth measurement.
Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel; $1\% \leq RBW \leq 5\%$ of the 20 dB bandwidth; $VBW \geq 3RBW$;
Sweep = auto; Detector function = peak; Trace = max hold.
4. Measure and record the results in the test report.

10.4 Test Result

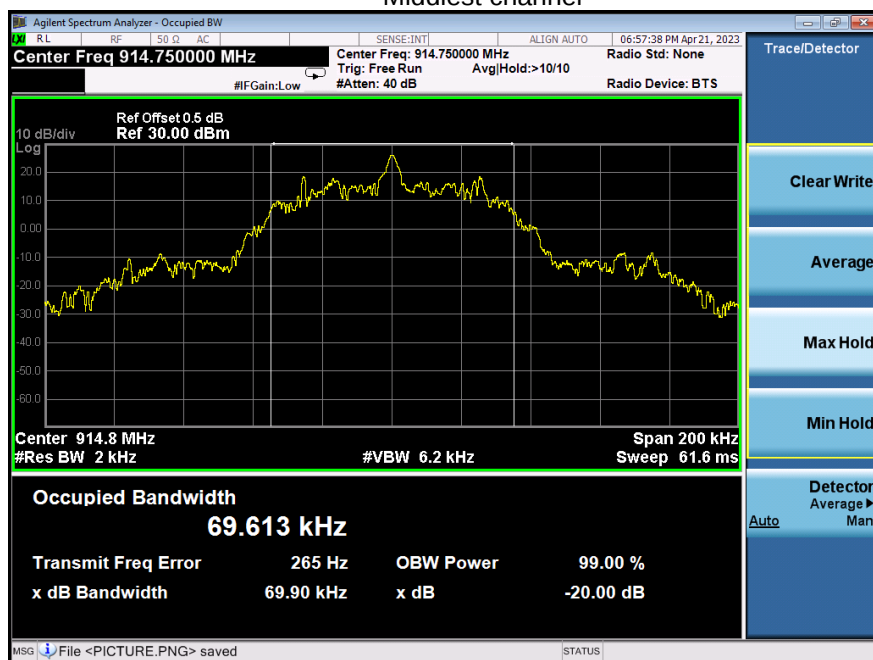
Test channel		ASK		
		20dB(kHz)	Limit(kHz)	Conclusion
Lowest	Antenna1	72.63	≤ 250	PASS
Middlest		69.90	≤ 250	PASS
Highest		72.69	≤ 250	PASS
Lowest	Antenna2	72.68	≤ 250	PASS
Middlest		69.56	≤ 250	PASS
Highest		72.47	≤ 250	PASS
Lowest	Antenna3	72.32	≤ 250	PASS
Middlest		68.65	≤ 250	PASS
Highest		72.63	≤ 250	PASS
Lowest	Antenna4	72.73	≤ 250	PASS
Middlest		67.75	≤ 250	PASS
Highest		69.55	≤ 250	PASS

Antenna1

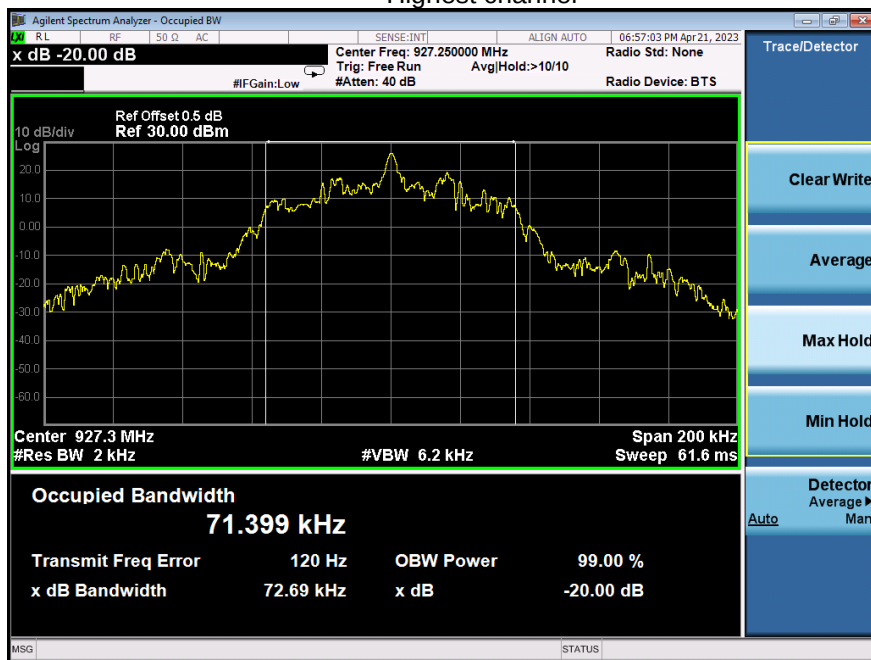
Lowest channel



Middlest channel

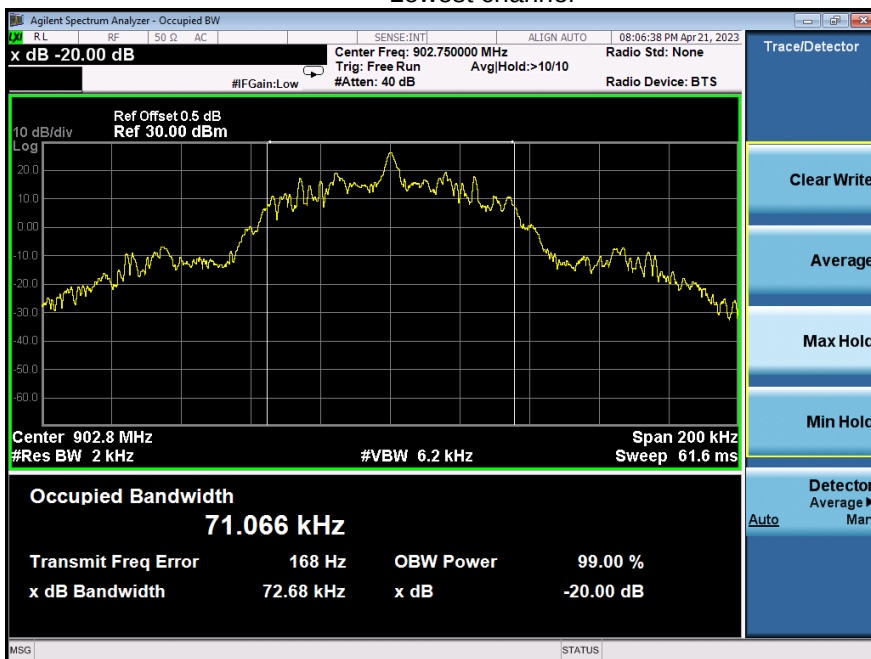


Highest channel

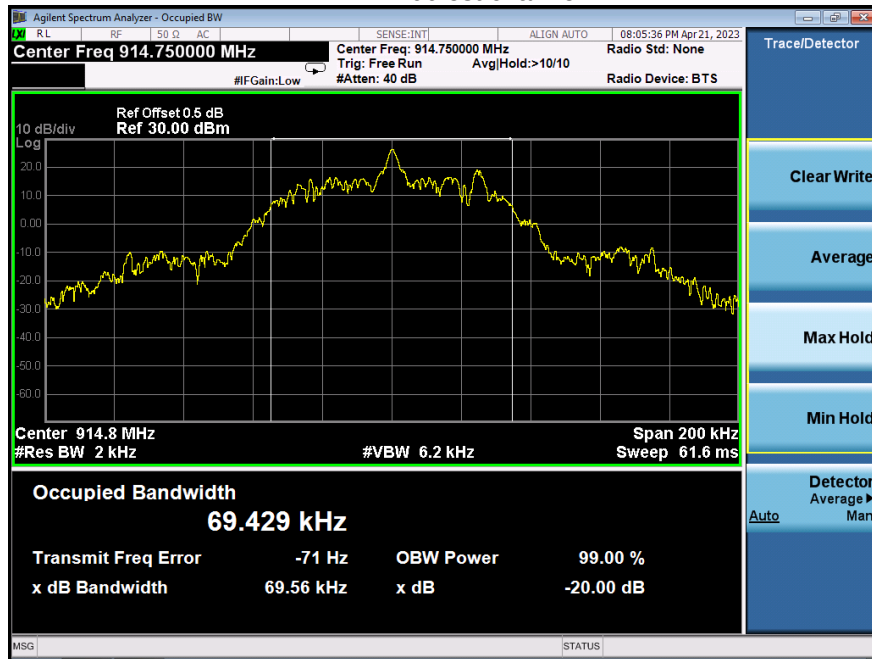


Antenna2

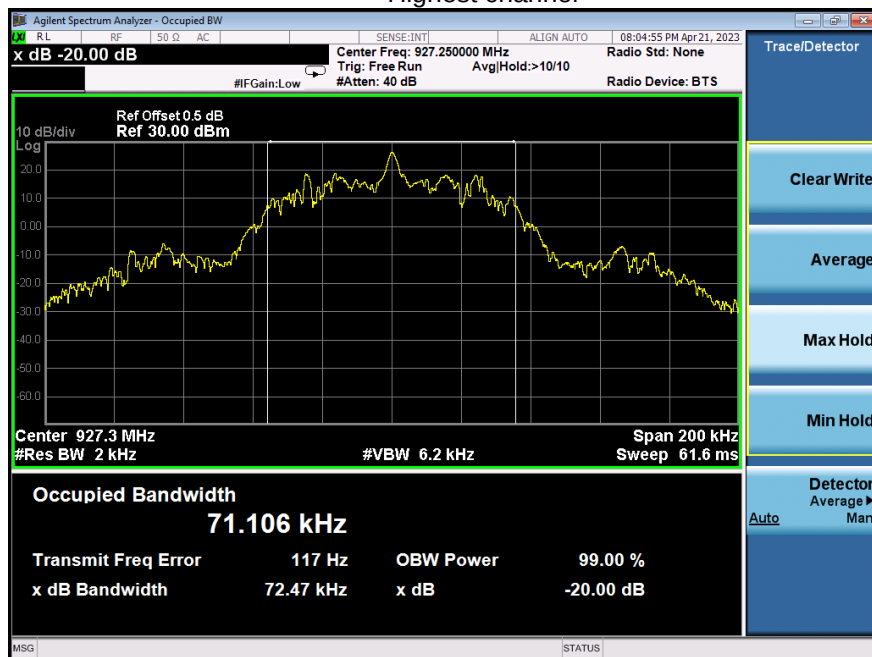
Lowest channel



Middlest channel

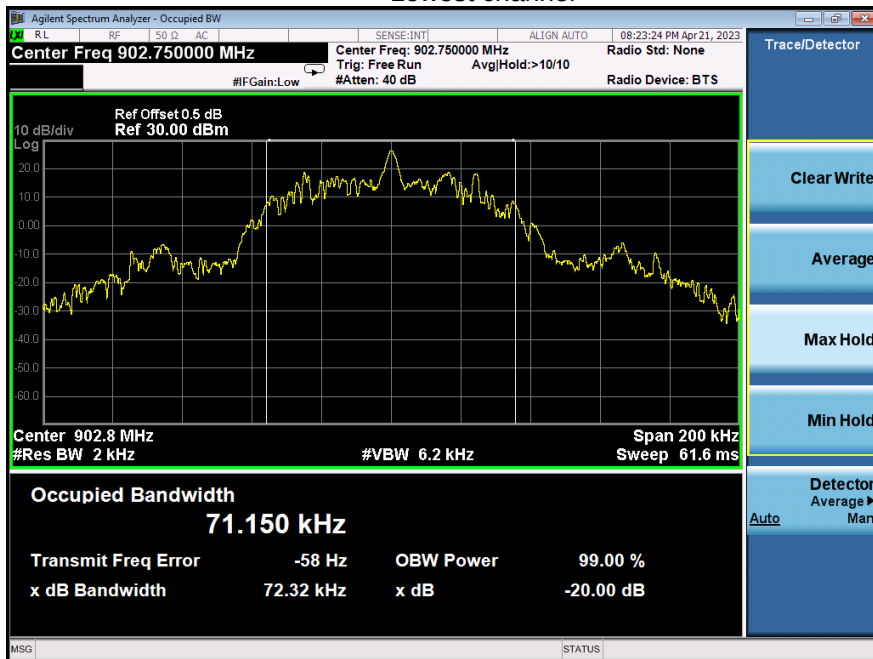


Highest channel

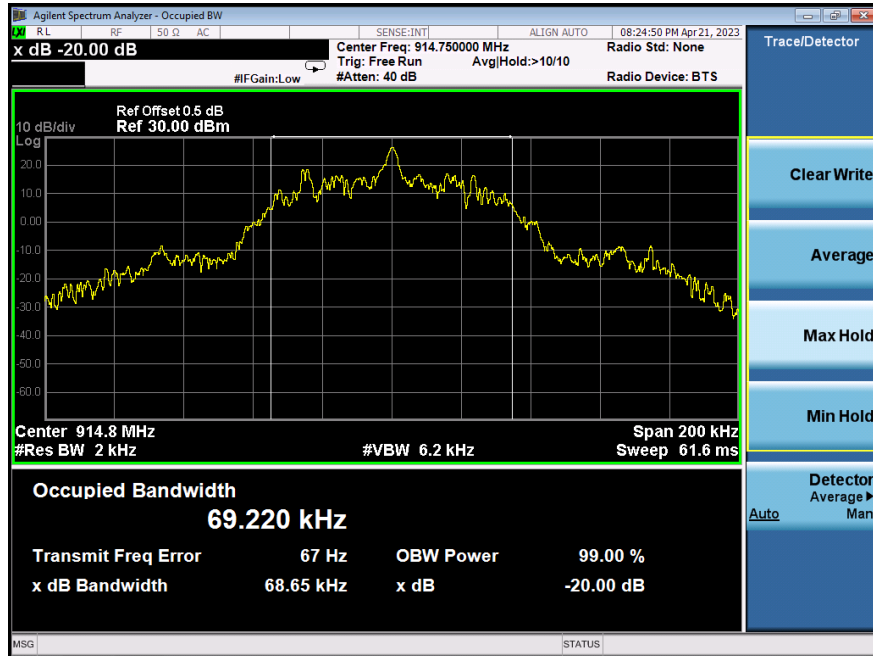


Antenna3

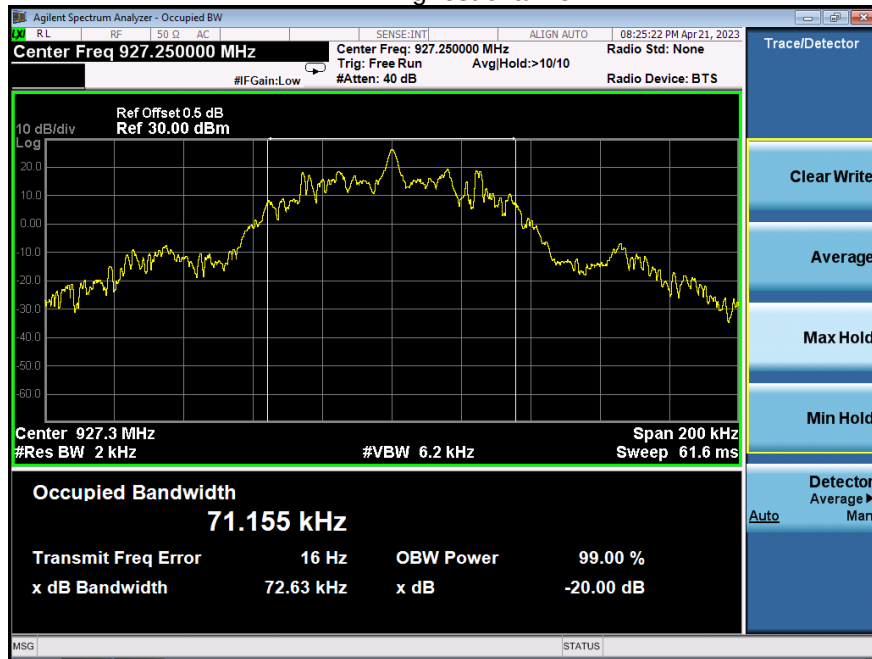
Lowest channel



Middlest channel

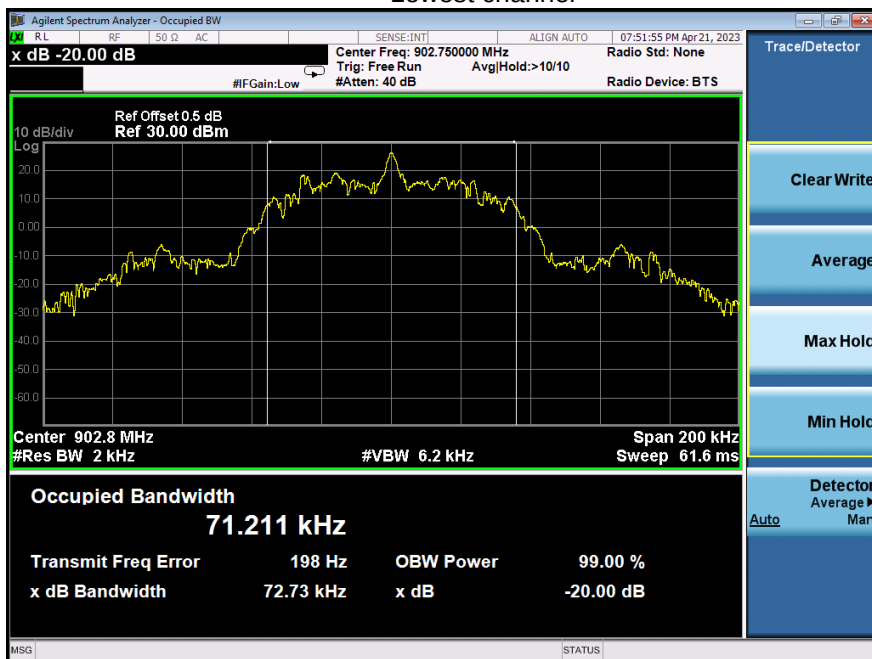


Highest channel

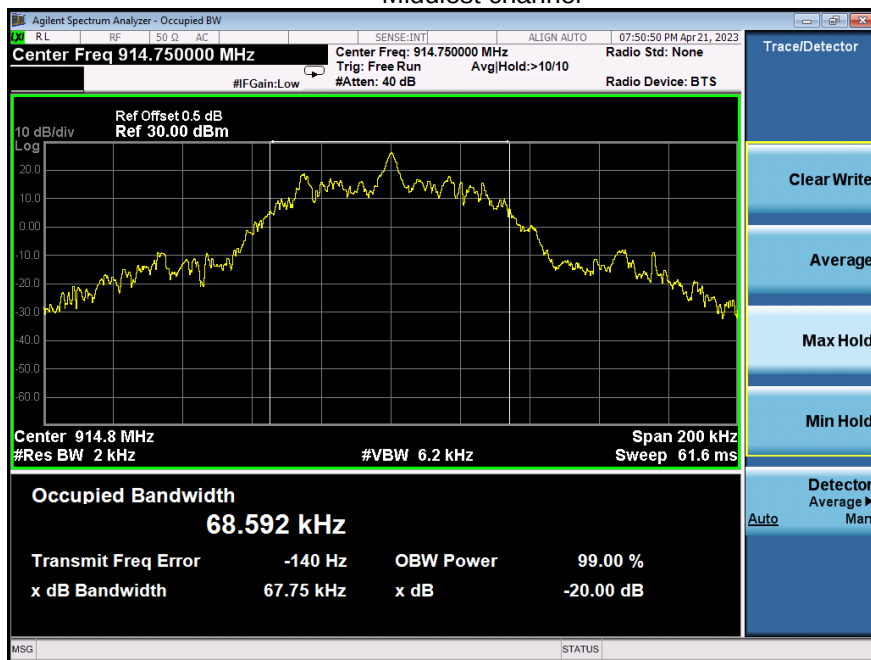


Antenna4

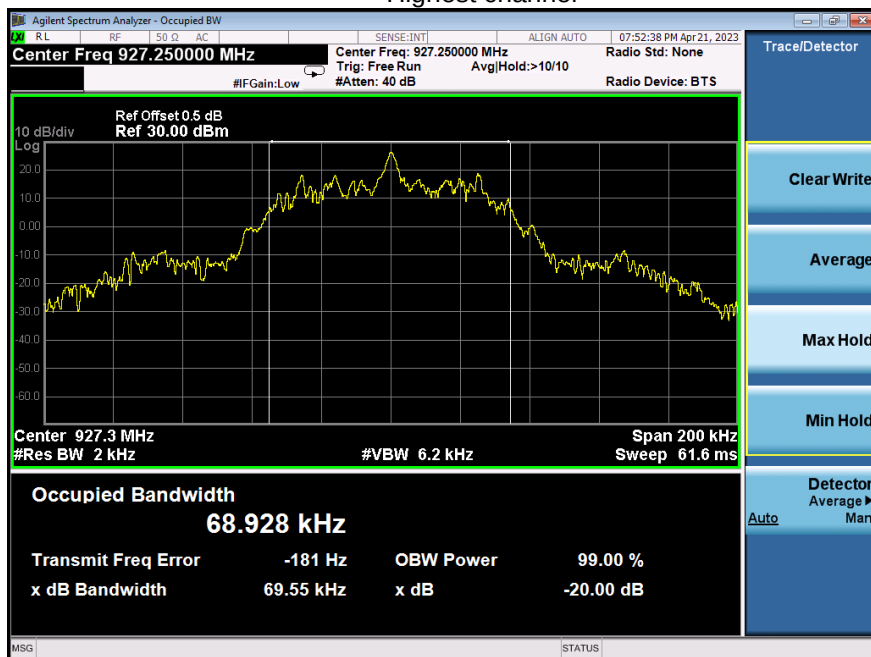
Lowest channel



Middlest channel

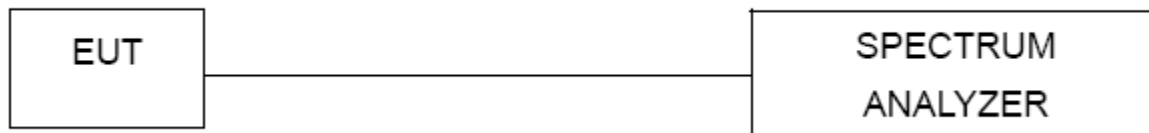


Highest channel



11. Conducted Output Power

11.1 Block Diagram Of Test Setup



11.2 Limit

For frequency hopping systems operating in the 902-928 MHz band: 1 watt for systems employing at least 50 hopping channels; and, 0.25 watts for systems employing less than 50 hopping channels, but at least 25 hopping channels, as permitted under paragraph (a)(1)(i) of this section.

11.3 Test procedure

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

Allow the trace to stabilize.

Use the marker-to-peak function to set the marker to the peak of the emission.

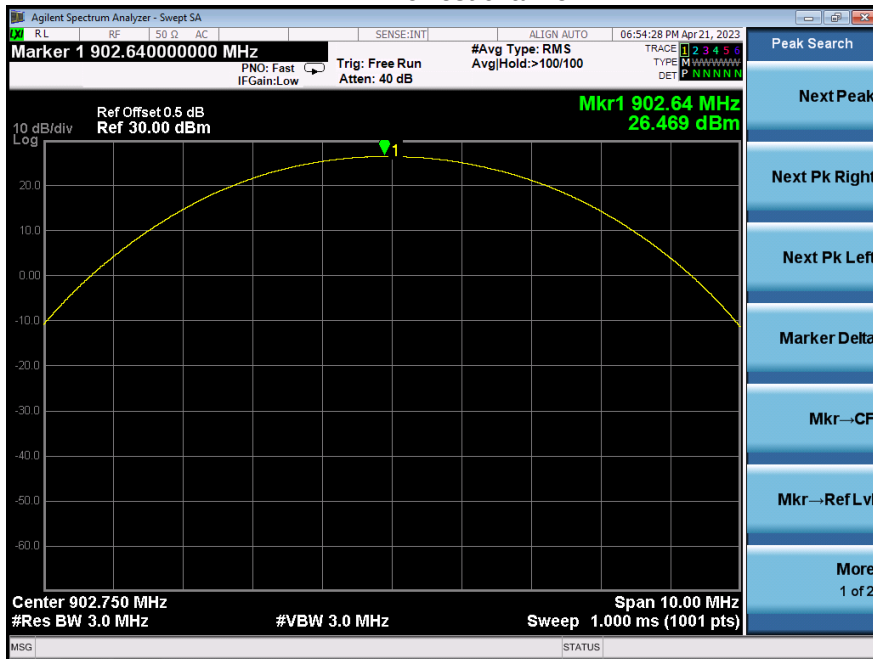
11.4 Test Result

ASK				
Test channel		Peak Output Power (dBm)	Limit (dBm)	Result
Lowest	Antenna1	26.469	30.00	PASS
Middlest		26.439	30.00	PASS
Highest		26.439	30.00	PASS
Lowest	Antenna2	26.654	30.00	PASS
Middlest		26.503	30.00	PASS
Highest		26.482	30.00	PASS
Lowest	Antenna3	26.680	30.00	PASS
Middlest		26.634	30.00	PASS
Highest		26.699	30.00	PASS
Lowest	Antenna4	26.532	30.00	PASS
Middlest		26.446	30.00	PASS
Highest		26.465	30.00	PASS

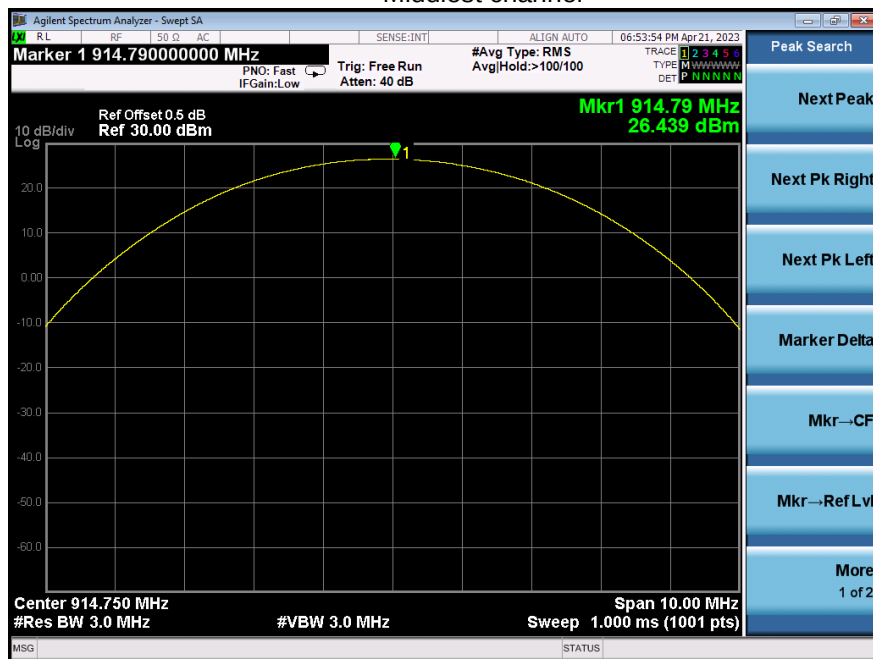
Note : The module does not support the MIMO mode

Antenna1

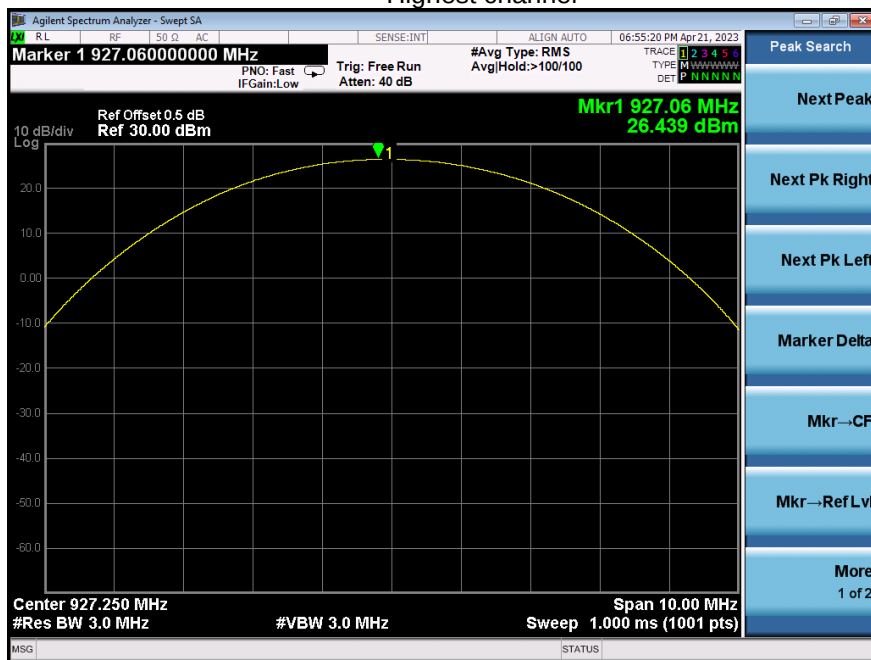
Lowest channel



Middlest channel

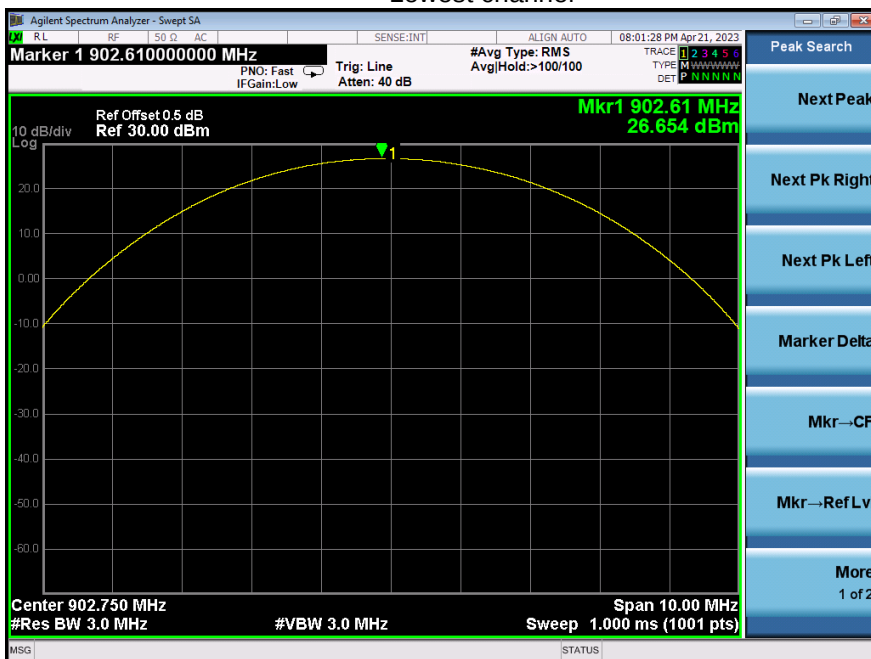


Highest channel

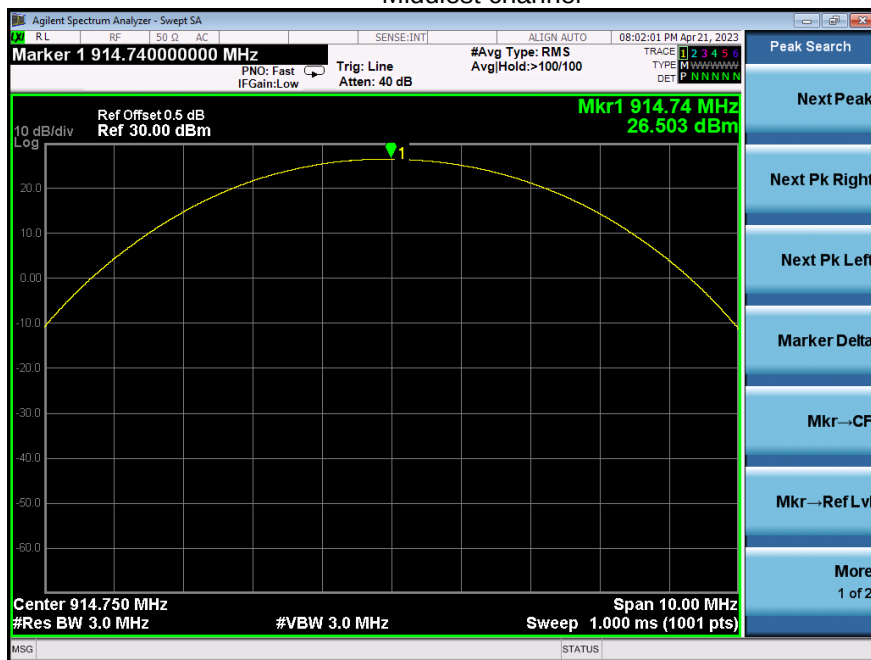


Antenna2

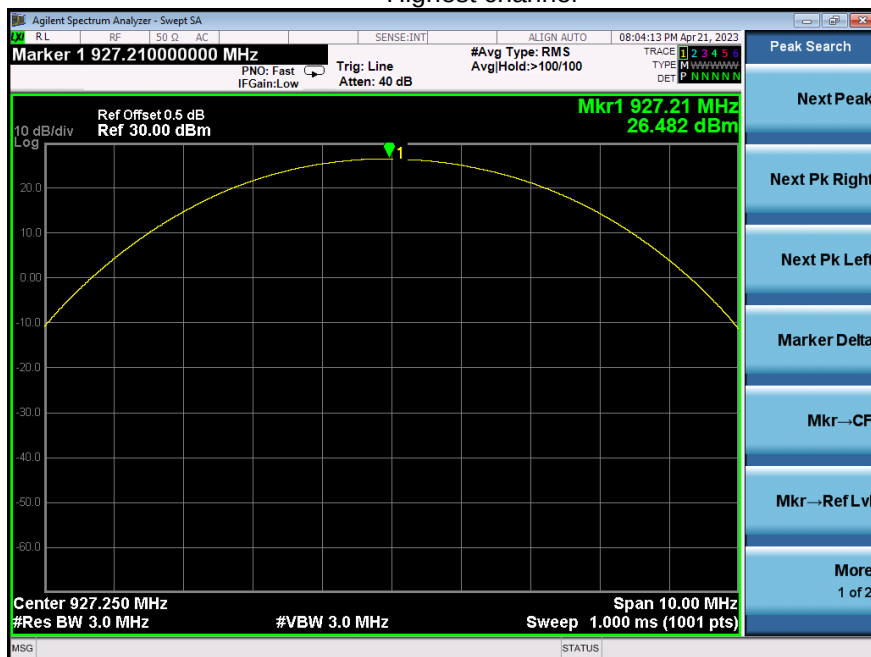
Lowest channel



Middlest channel



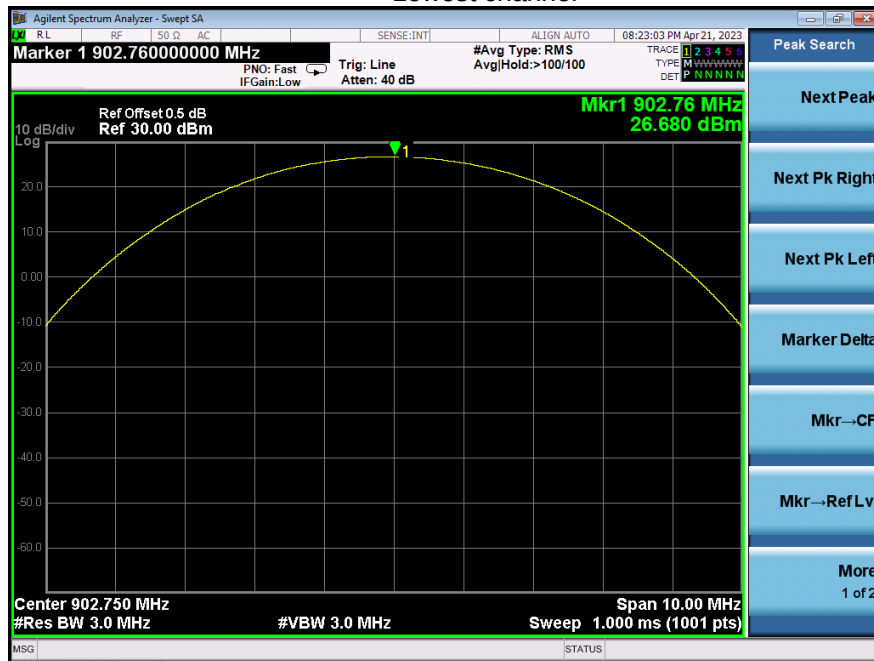
Highest channel



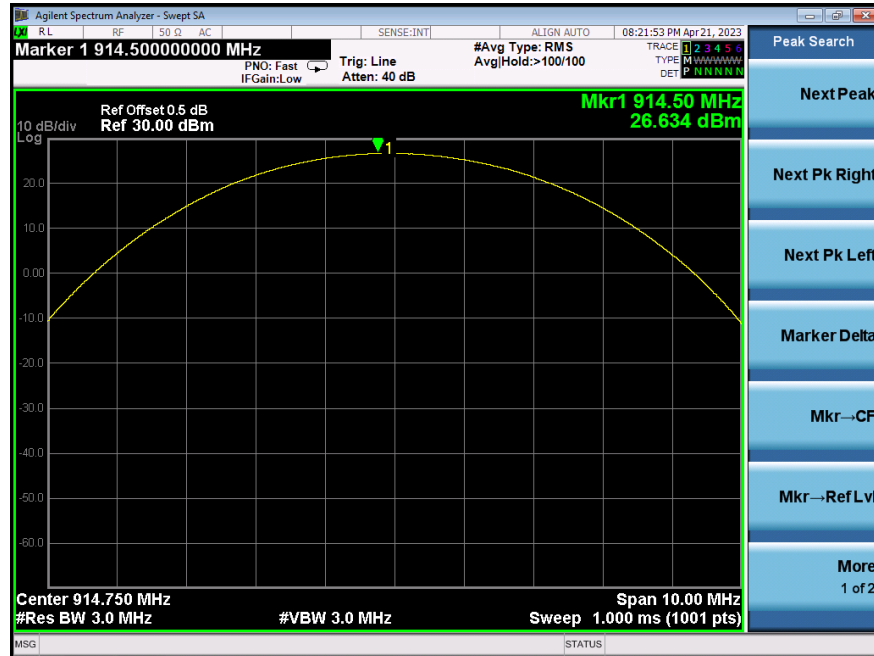
SHENZHEN

Antenna3

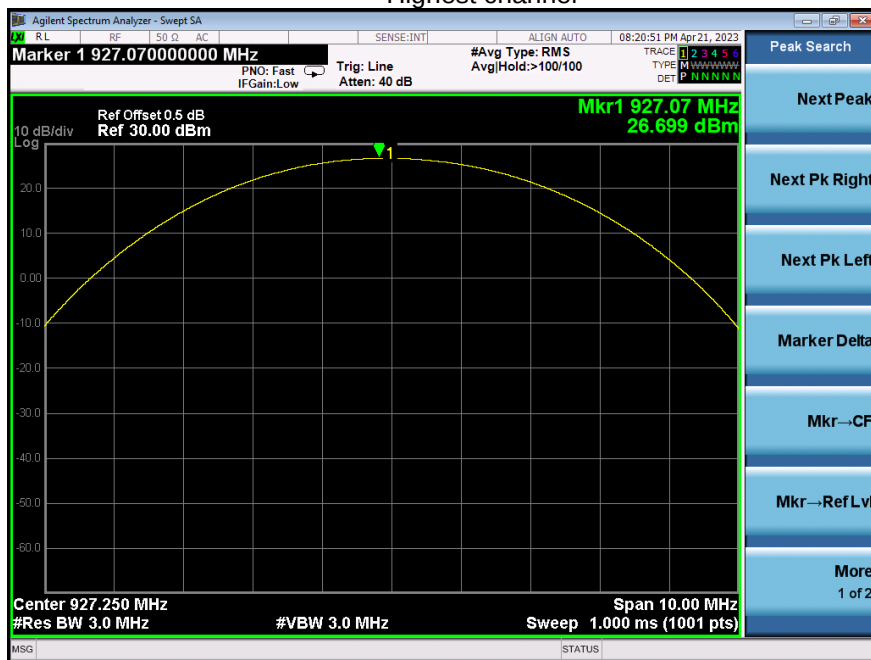
Lowest channel



Middlest channel

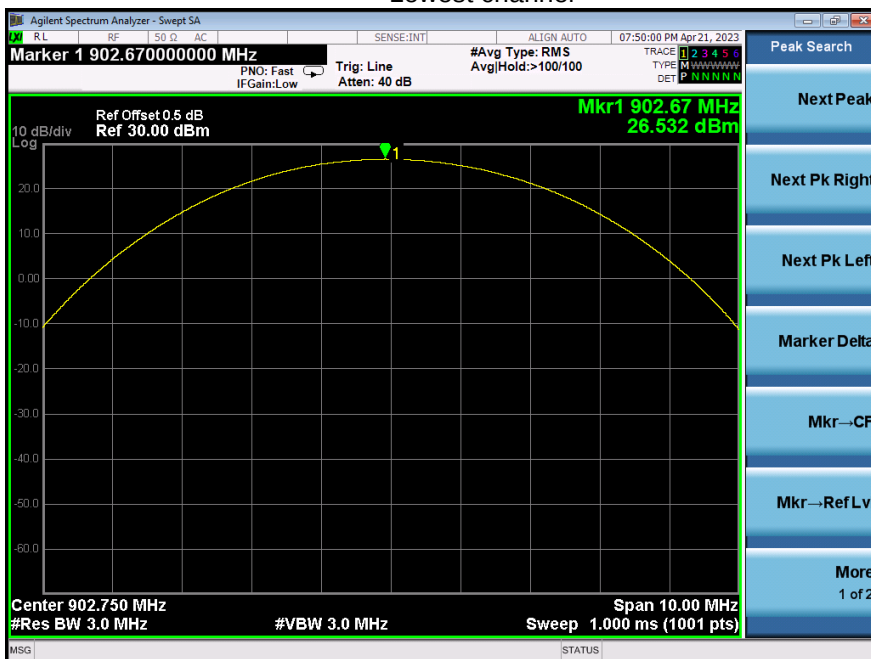


Highest channel

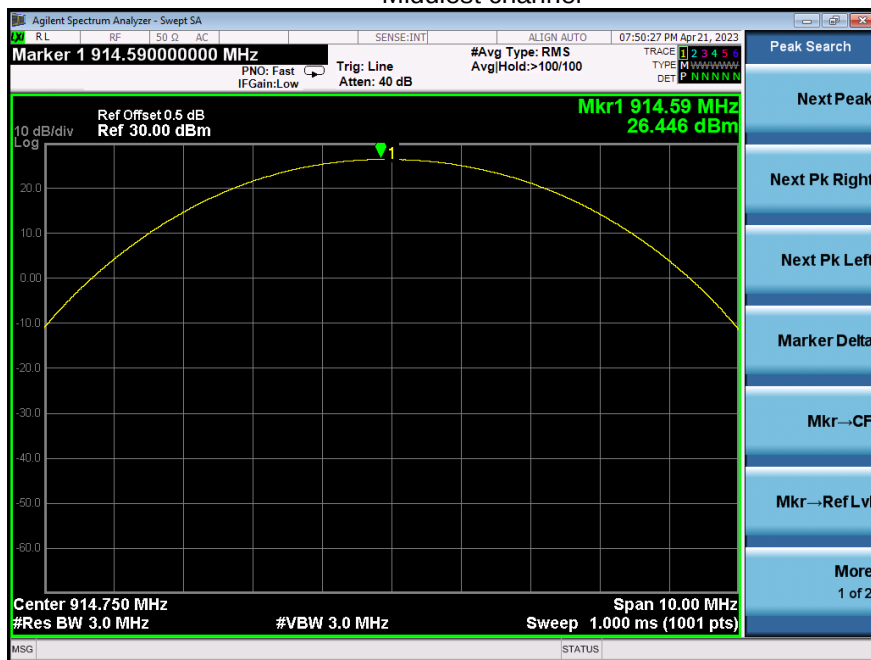


Antenna4

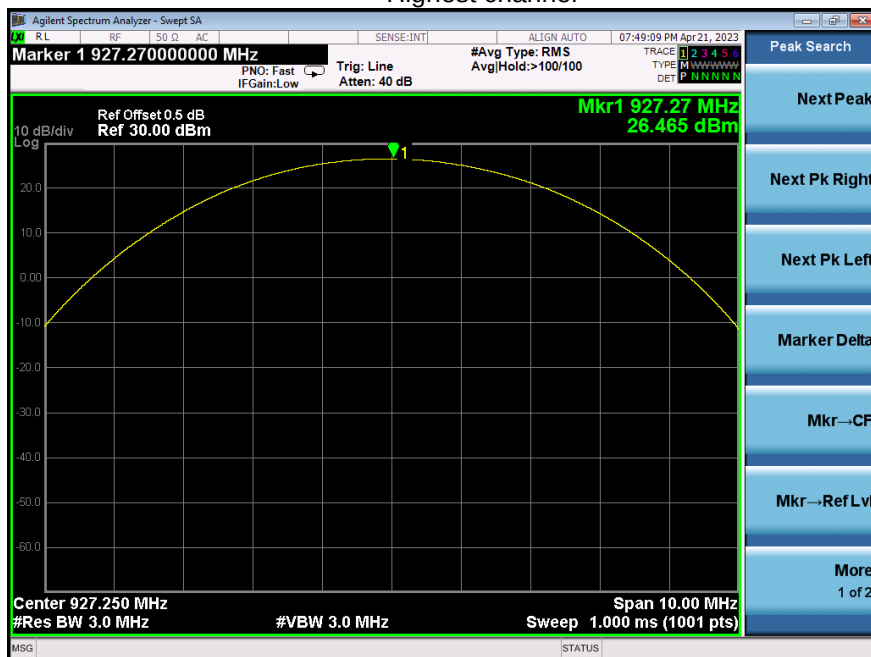
Lowest channel



Middlest channel



Highest channel



12. Hopping Channel Separation

12.1 Block Diagram Of Test Setup



12.2 Limit

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

12.3 Test procedure

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum.
2. Set the spectrum analyzer: RBW = 30kHz. VBW = 100kHz, Span = 1.0MHz. Sweep = auto; Detector Function = Peak. Trace = Max hold.
3. Allow the trace to stabilize. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. The limit is specified in one of the subparagraphs of this Section Submit this plot.

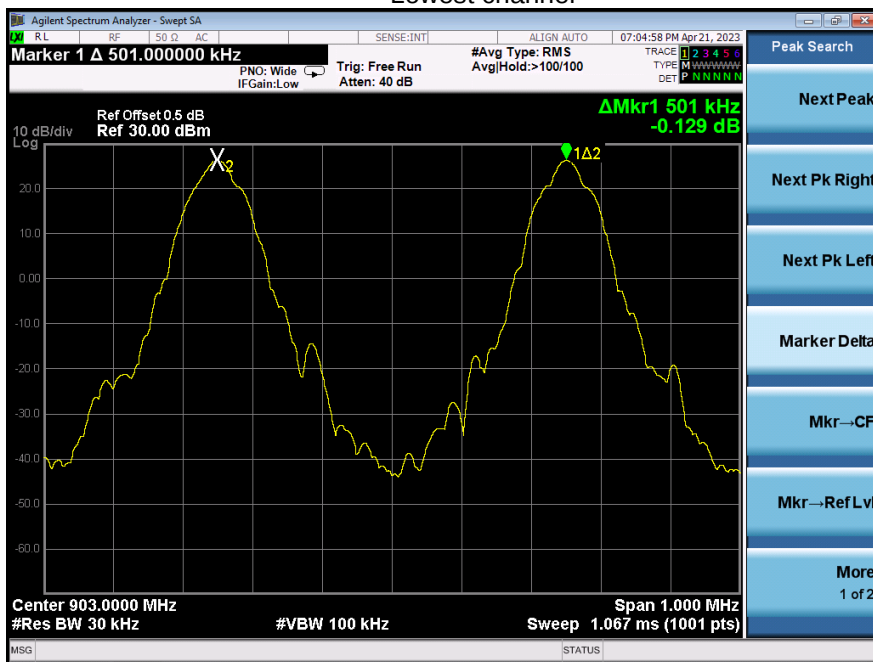
12.4 Test Result

For FHSS:

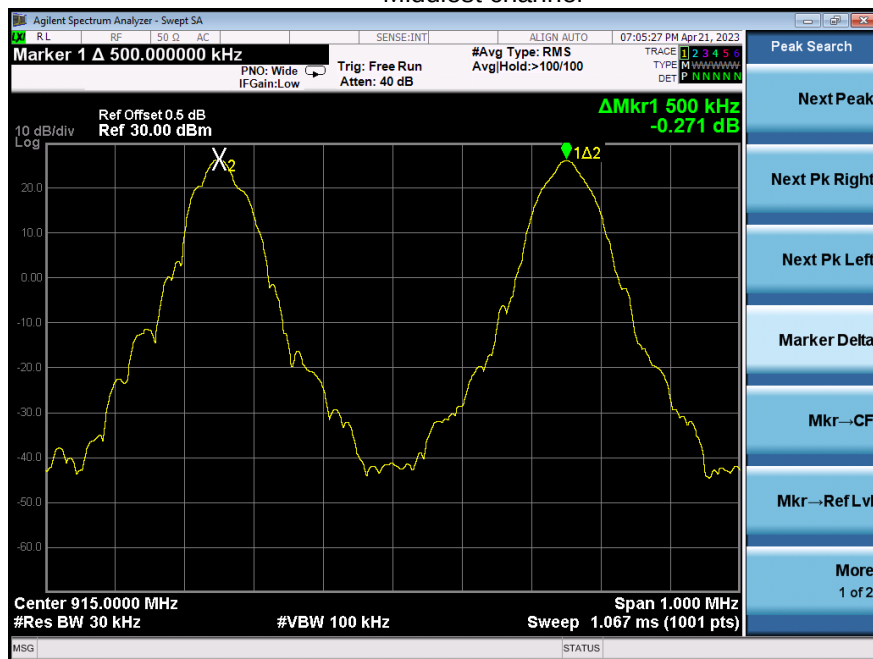
ASK				
Test channel		Carrier Frequencies Separation (kHz)	Limit (kHz)	Result
Lowest	Antenna1	501	72.63	PASS
Middlest		500	69.90	PASS
Highest		499	72.69	PASS
Lowest	Antenna2	499	72.68	PASS
Middlest		501	69.56	PASS
Highest		500	72.47	PASS
Lowest	Antenna3	500	72.32	PASS
Middlest		501	68.65	PASS
Highest		500	72.63	PASS
Lowest	Antenna4	500	72.73	PASS
Middlest		500	67.75	PASS
Highest		500	69.55	PASS

Antenna1

Lowest channel

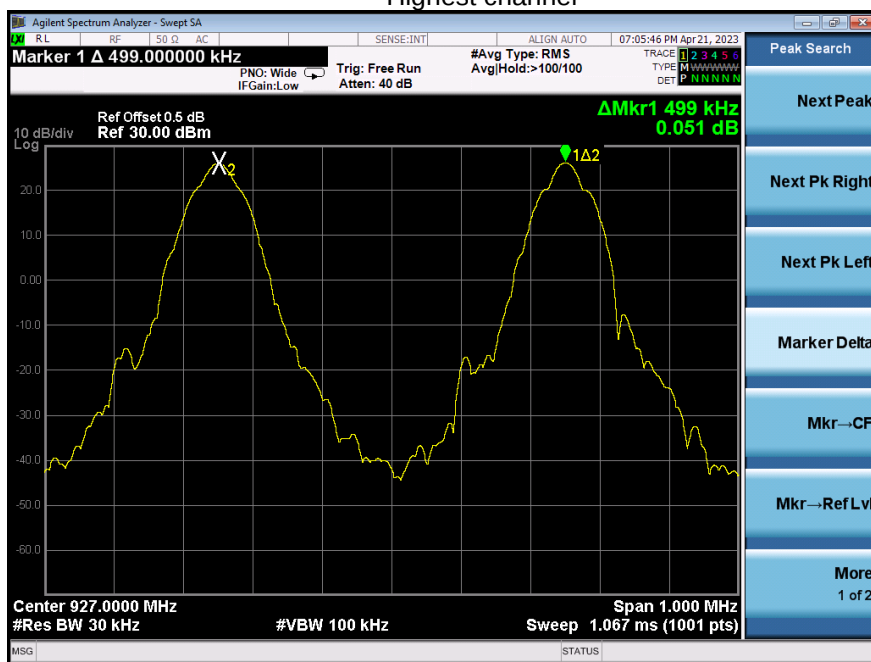


Middlest channel



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Highest channel



Antenna2

Lowest channel



Middlest channel



Highest channel



Antenna3

Lowest channel



Middlest channel



Highest channel



Antenna4

Lowest channel



Middlest channel

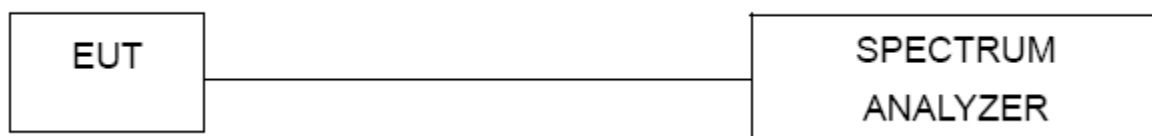


Highest channel



13. Number Of Hopping Frequency

13.1 Block Diagram Of Test Setup



13.2 Limit

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies.

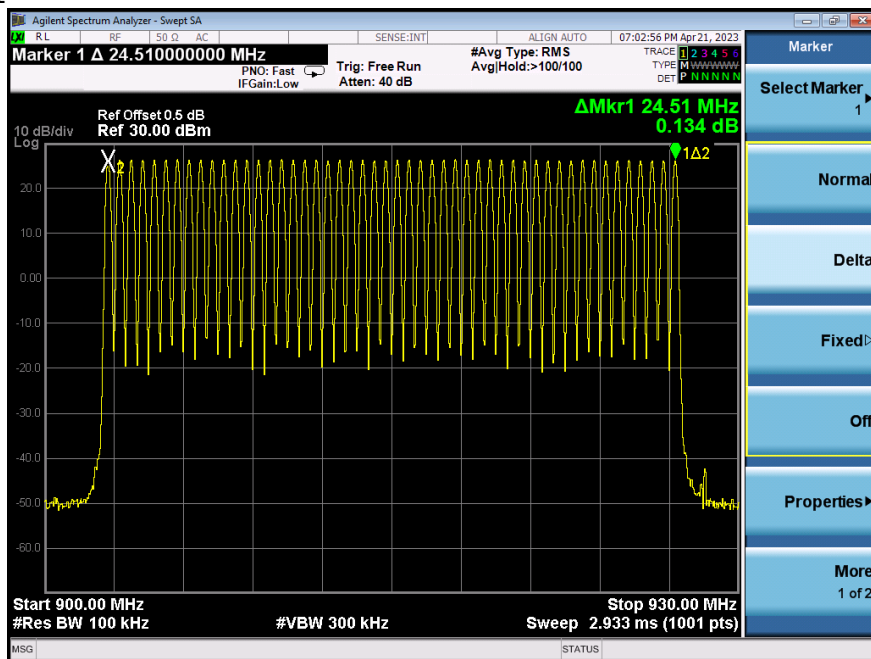
13.3 Test procedure

1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Enable the EUT hopping function.
4. Use the following spectrum analyzer settings: Span = the frequency band of operation; set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller; VBW $\geq$ RBW; Sweep = auto; Detector function = peak; Trace = max hold
5. The number of hopping frequency used is defined as the number of total channel.
6. Record the measurement data in report.

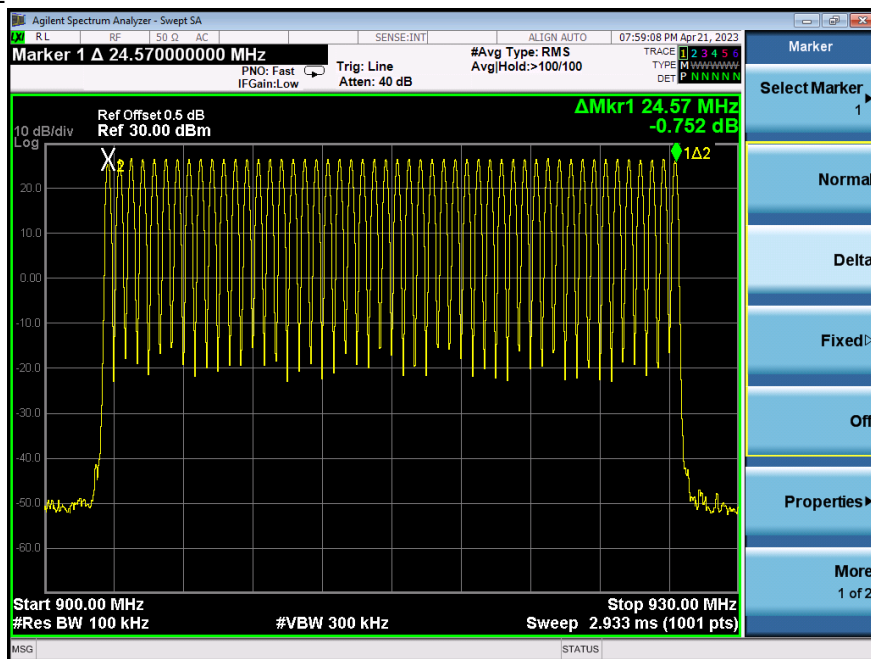
13.4 Test Result

Antenna	Hopping channel numbers	Limit	Result
Antenna1	50	50	PASS
Antenna2	50	50	PASS
Antenna3	50	50	PASS
Antenna4	50	50	PASS

Antenna1

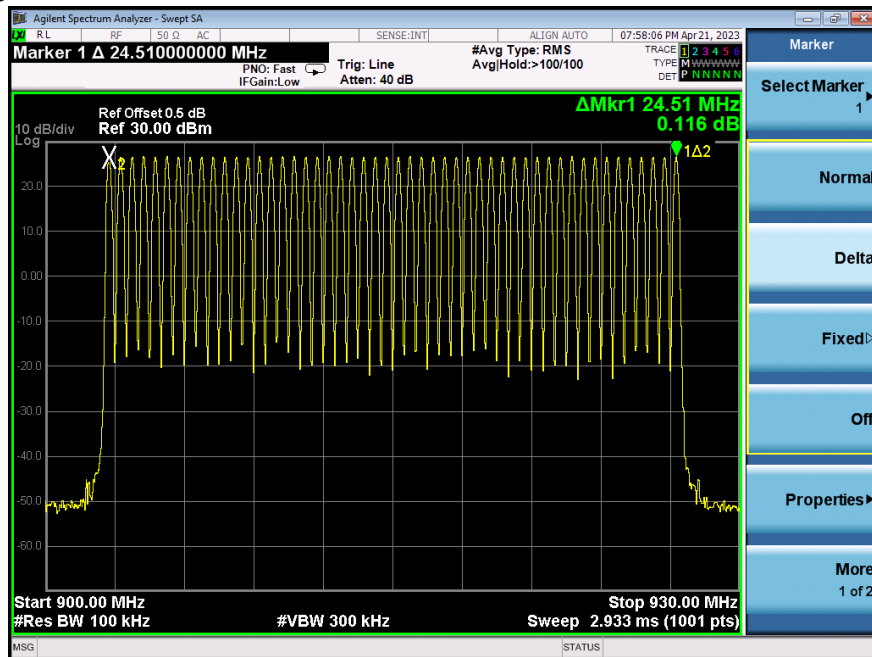


Antenna2

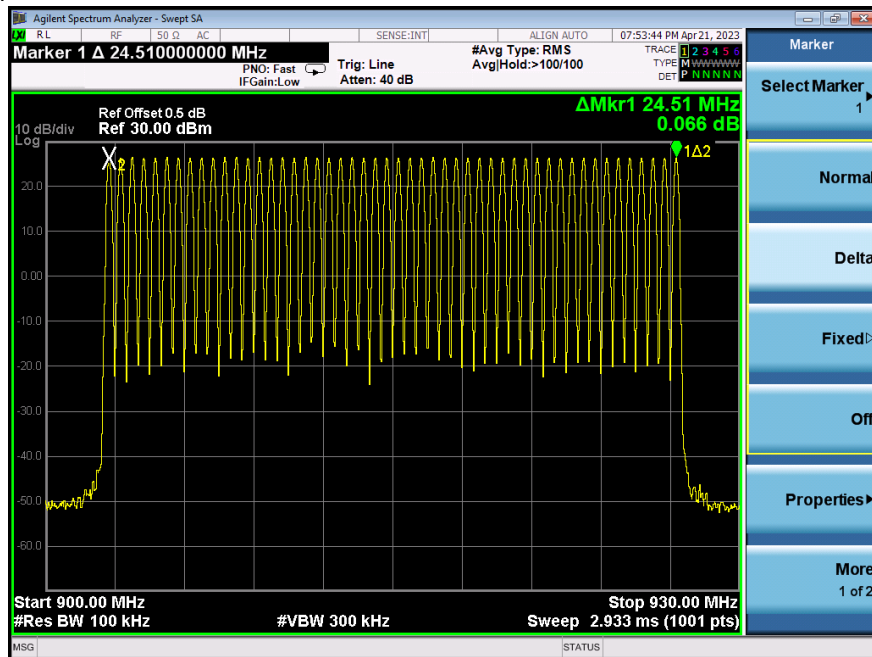


SHENZHEN

Antenna3



Antenna4



14. Dwell Time

14.1 Block Diagram Of Test Setup



14.2 Limit

For frequency hopping systems operating in the 902-928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

14.3 Test procedure

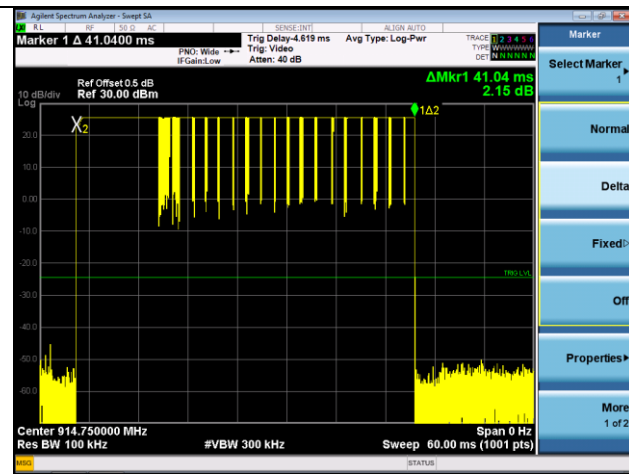
1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Enable the EUT hopping function.
4. The spectrum analyzer is set to:
Center frequency = 914.75MHz, Span = zero
RBW = 100 kHz (RBW shall be $\leq$ channel spacing and where possible RBW should be set $\gg 1/T$, where T is the expected dwell time per channel),
VBW $\geq$ RBW Detector function = peak,
Trace = max hold
5. Measure and record the results in the test report.

14.4 Test Result

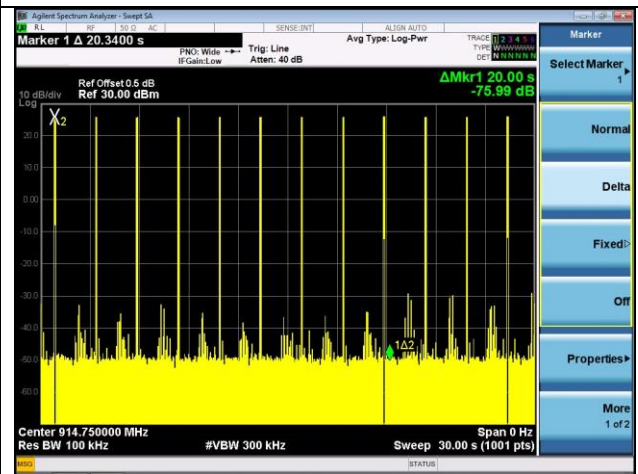
Antenna	Length (ms)	Number	Dwell time (ms)	Limit (ms)	Result
Antenna1	41.04	9	369.36	400	PASS
Antenna2	39.54	9	355.86	400	PASS
Antenna3	40.80	9	367.2	400	PASS
Antenna4	40.26	9	362.34	400	PASS

Note: Dwell time= Length* Number

Length (Hopping Mode)

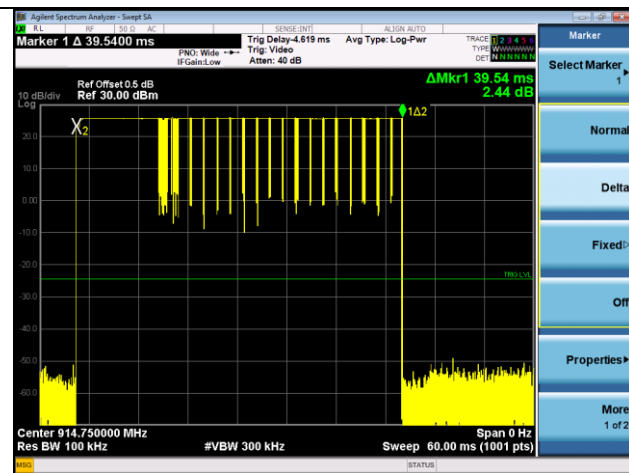


Period (Hopping Mode)

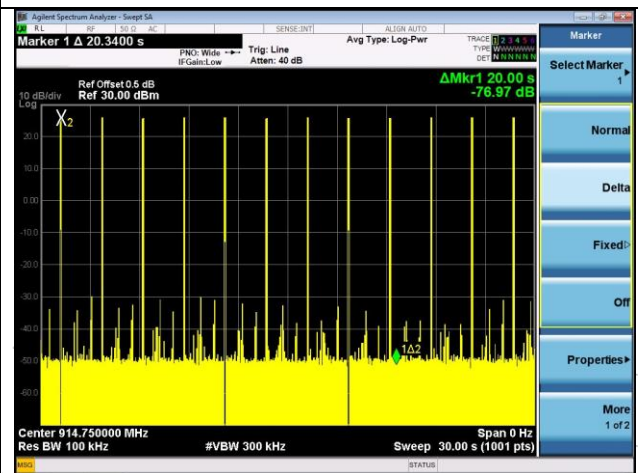


Antenna2

Length (Hopping Mode)

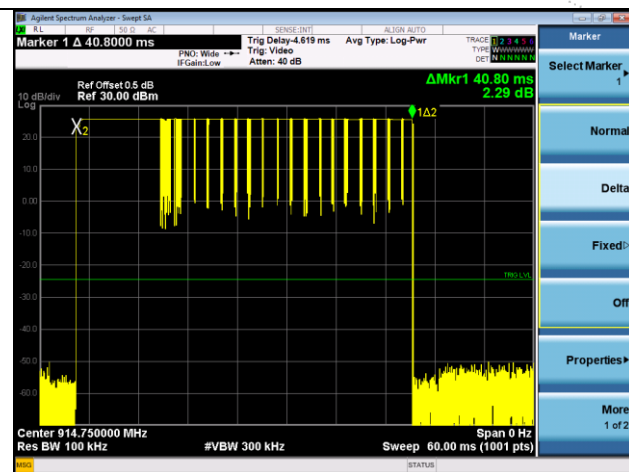


Period (Hopping Mode)

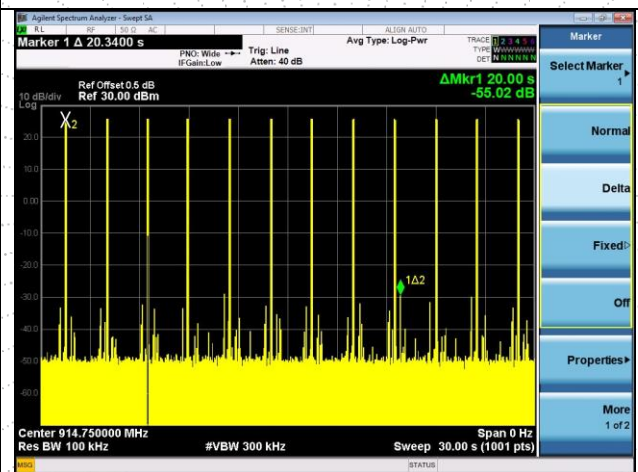


Antenna3

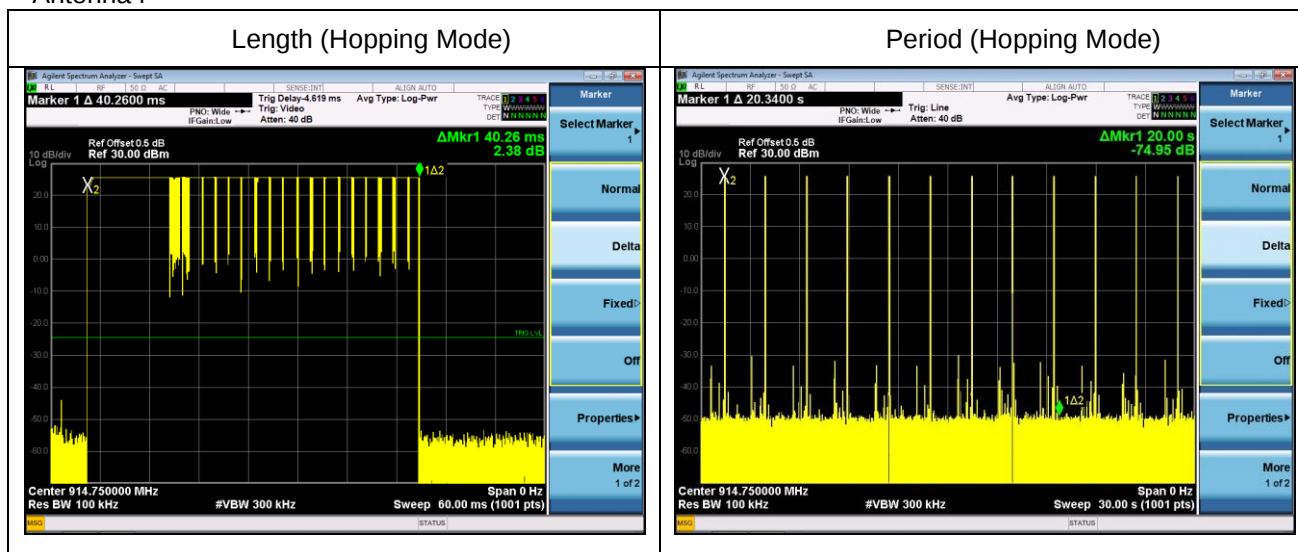
Length (Hopping Mode)



Period (Hopping Mode)



Antenna4



15. Antenna Requirement

15.1 Limit

15.203 requirement: For intentional device, according 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.

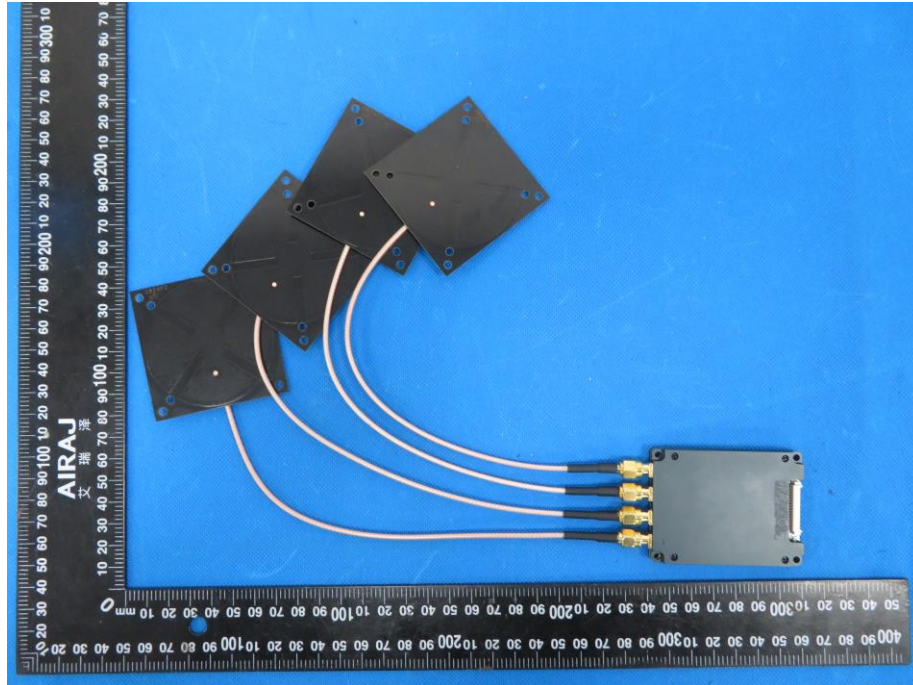
15.2 Test Result

The EUT antenna is External antenna, antenna gain is 0dBi, antenna connector type is RP-SMA, fulfill the requirement of this section.

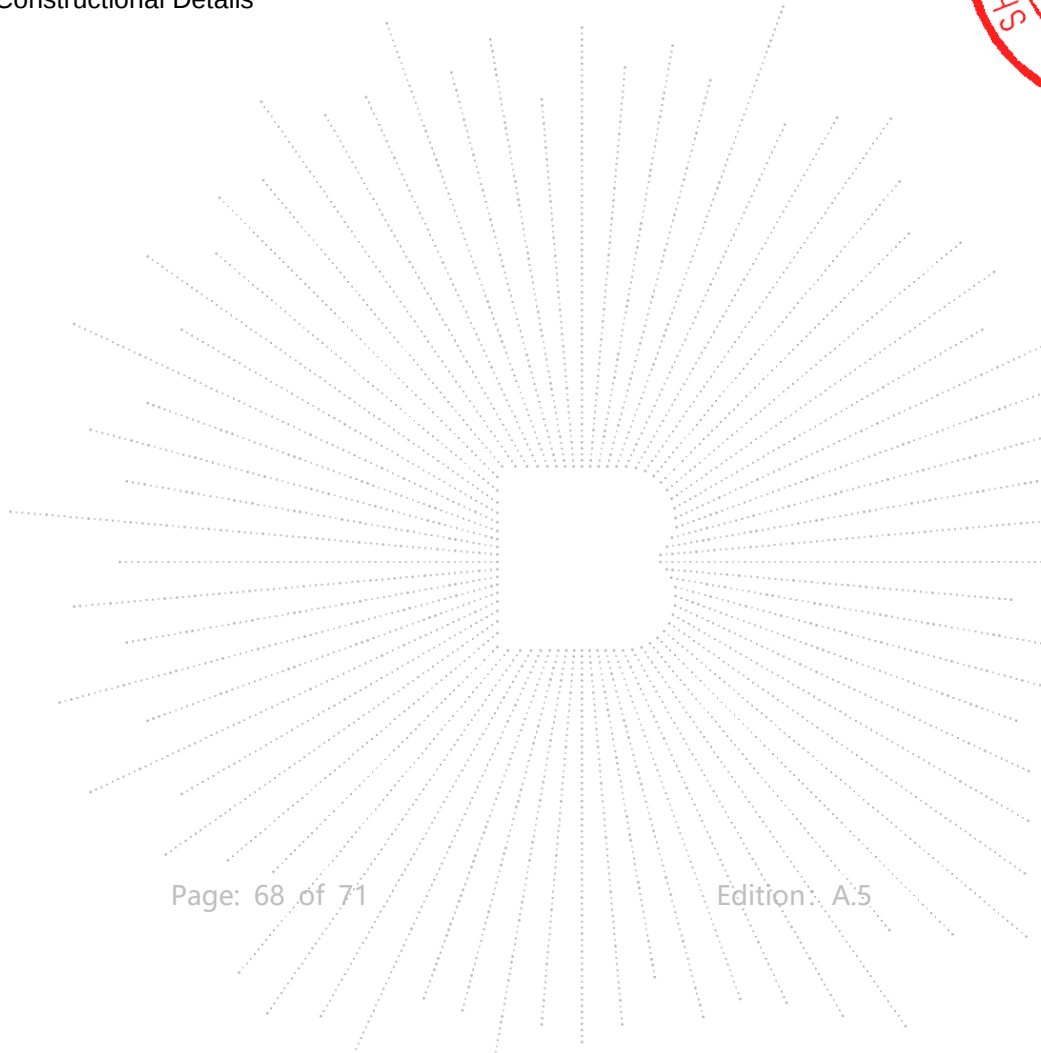
CO., LTD.

16. EUT Photographs

EUT Photo



Appendix-Photographs Of EUT Constructional Details

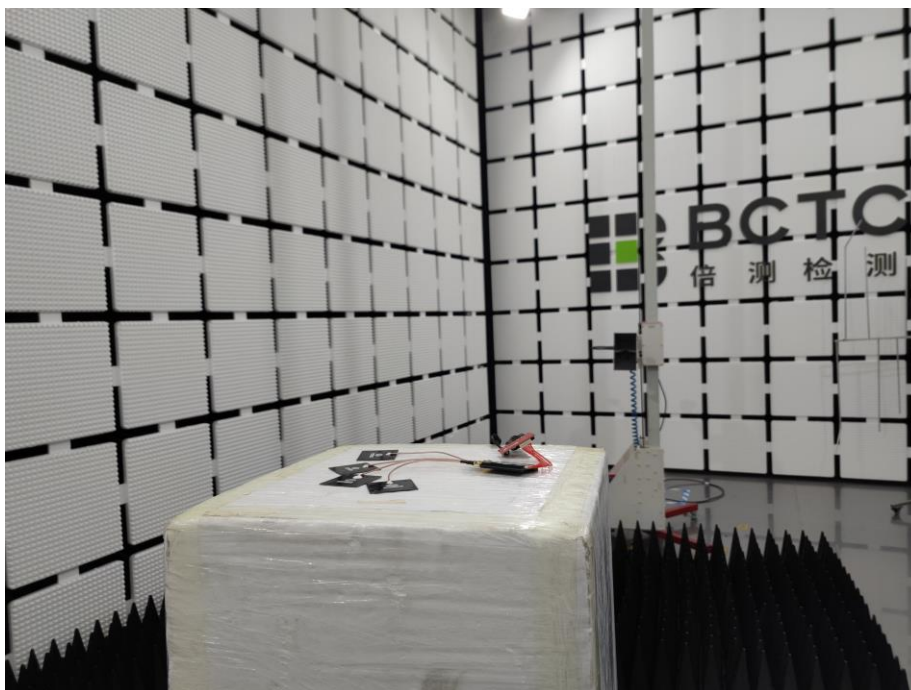
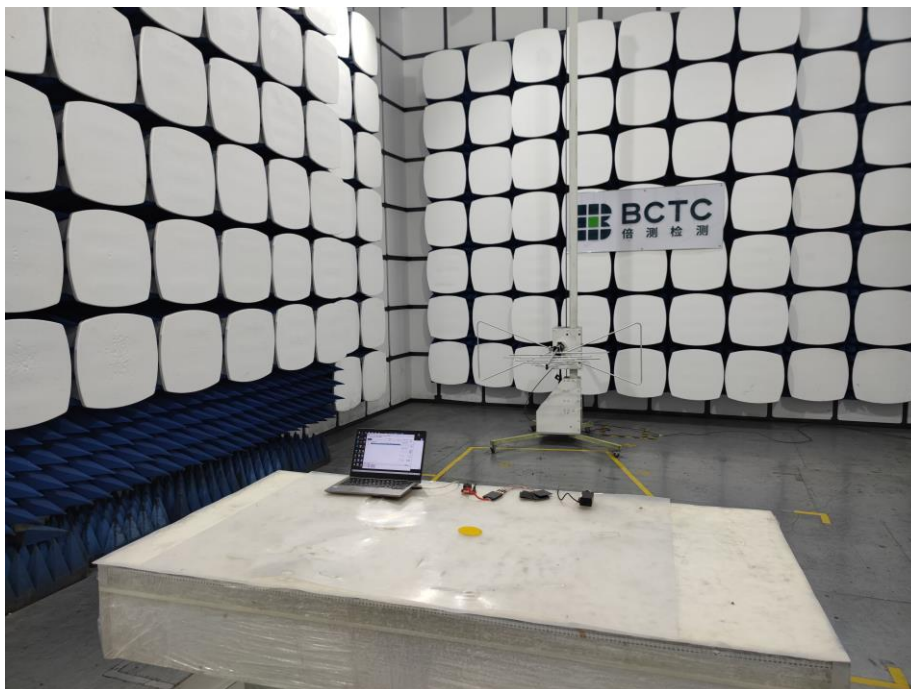


17. EUT Test Setup Photographs

Conducted emissions



Radiated Measurement Photos



TEST
TC
OVED
检测

STATEMENT

1. The equipment lists are traceable to the national reference standards.
2. The test report can not be partially copied unless prior written approval is issued from our lab.
3. The test report is invalid without the "special seal for inspection and testing".
4. The test report is invalid without the signature of the approver.
5. The test process and test result is only related to the Unit Under Test.
6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.
7. The test report without CMA mark is only used for scientific research, teaching, enterprise product development and internal quality control purposes.
8. The quality system of our laboratory is in accordance with ISO/IEC17025.
9. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:

1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China

TEL: 400-788-9558

P.C.: 518103

FAX: 0755-33229357

Website: <http://www.chnbctc.com>

E-Mail: bctc@bctc-lab.com.cn

******* END *******

