Spot Check Evaluation

FCC ID	:	UZ7EM45B1
EQUIPMENT	:	Enterprise Mobile
BRAND NAME	:	Zebra
MODEL NAME	:	EM45B1
APPLICANT	:	Zebra Technologies Corporation 3 Overlook Point, Lincolnshire, IL 60069 USA
MANUFACTURER	:	Zebra Technologies Corporation 3 Overlook Point, Lincolnshire, IL 60069 USA
STANDARD	:	47 CFR Part 22(H), 24(E), 27(L), 27(H), 27(F), 27(M), 27(N), 27(O), 27(Q), 90(S) 47 CFR Part 15 Subpart C §15.247 47 CFR Part 15 Subpart C §15.225 47 CFR Part 15 Subpart E §15.407

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.26-2015 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

ACCREDITED
Cert #5145.02

Sporton International Inc. (Kunshan)
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China

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APPENDIX B. REFERENCE REPORT

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR460508-02A	Rev. 01	Initial issue of report	Feb. 13, 2025

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Enterprise Mobile
Brand Name	Zebra
Model Name	EM45B1
FCC ID	UZ7EM45B1
IMEI Code	Conducted: 350332150060484 Conduction: 350332150060096/350332150064049 Radiation: 350332150060260/350332150063959 CBP/DFS: 350332150060575
HW Version	DV
SW Version	14-24-09.00-UG-U00-PRD-ATH-04
MFD	09DEC24
EUT Stage	Identical Prototype

Specification of Accessory				
Battery	**Brand Name**	Zebra	**Model**	BT-000501
			Part Number	BT-000501-2000

Supported Unit used in test configuration and system				
AC Adapter 1 (Type C Wall Charger 1)	**Brand Name**	Zebra	**Model**	SAWA-102-22520A
			Part Number	PWR-WUA5V45W1US
AC Adapter 2 (Type A Wall Charger 2)	**Brand Name**	Zebra	**Model**	SAWA-65-20005A
			Part Number	PWR-WUA5V12W0US
Earphone 1 (Wired headset USB-C)	**Brand Name**	Zebra	**Part Number**	HDST-USBC-PTT1-01
Earphone 2 (Rugged Bluetooth Headset)	**Brand Name**	Zebra	**Part Number**	HS3100-OTH
Earphone 3 (3.5mm PTT Headset)	**Brand Name**	Zebra	**Part Number**	HDST-35MM-PTT1-02
Earphone 4 (Rugged Headset)	**Brand Name**	Zebra	**Part Number**	HS2100-OTH
3.5mm to 3.5mm audio connector	**Brand Name**	Zebra	**Part Number**	CBL-HS2100-3MS1-01
Type C-Audio Cable (Type C to 3.5mm)	**Brand Name**	Zebra	**Part Number**	ADP-USBC-35MM1-01
USB Cable 1 (USB-C to C Cable)	**Brand Name**	Zebra	**Part Number**	CBL-EC5X-USBC3A-01
USB Cable 2 (USB-A to C Cable)	**Brand Name**	Zebra	**Part Number**	CBL-TC5X-USBC2A-01
EM45 Protective Case	**Brand Name**	Zebra	**Part Number**	SG-EM45EXO2-01

1.2 Modification of EUT

No modifications are made to the EUT during all test items.

1.3 Testing Site

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	TH01-KS CO01-KS DFS01-KS 03CH02-KS 03CH04-KS 03CH06-KS	CN1257	314309

1.4 Test Software

Item	Site	Manufacturer	Name	Version
1.	TH01-KS	Tonscend	JS1120-3 test system China_210602	3.3.10
2.	03CH02-KS	AUDIX	E3	6.2009-8-24al
3.	03CH04-KS	AUDIX	E3	210616
4.	03CH06-KS	AUDIX	E3	210616
5.	DFS01-KS	Sporton	Test Tools	1.0
6.	CO01-KS	AUDIX	E3	6.2009-8-24

1.5 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC KDB 484596 D01 Referencing Test Data v02r03
- 47 CFR Part 22(H), 24(E), 27(L), 27(H), 27(F), 27(M), 27(N), 27(O), 27(Q), 90(S)
- ANSI C63.10-2013
- ANSI C63.26-2015
- 47 CFR Part 15 Subpart C §15.225
- 47 CFR Part 15 Subpart C §15.247
- 47 CFR Part 15 Subpart E §15.407

2 Re-use of Measured Data

2.1 Introduction Section

This application re-uses data collected on a similar device. The subject device of this application (Model: EM45B1, FCC ID: UZ7EM45B1) is electrically identical to the reference device (Model: EM45B2, FCC ID: UZ7EM45B2) for the portions of the circuitry corresponding to the data being re-used, following the FCC KDB 484596 D01 Referencing Test Data v02r03.

ECR Data Referencing Inquiry has been approved by FCC, and the data referencing and spot check test plan includes RF/EMC, the details are presented in section 2.3 of this report, and for SAR Reference detail, please refer to FCC SAR report FA460508-02.

The criteria set in section 3 of KDB 484596 D01 v02r03 is followed to determine whether the data referencing is justified. For SAR, the higher between the referenced value and the spot check value is used to determine compliance in both standalone and simultaneous transmission conditions.

The applicant takes full responsibility that the test data as referenced in this report represent compliance for this FCC ID: UZ7EM45B1.

2.2 Model Difference Information

The **main** difference between FCC ID: UZ7EM45B2 and FCC ID: UZ7EM45B1 is as below:

- Removed RFID function.
- Antenna 1 removed WWAN TX function，keep supported Low bands and Middle bands RX function.

Other differences and all the details of similarity and difference can be found in the confidential documents (UZ7EM45B1 Operational Description of Product Equality Declaration).

2.3 Reference detail Section:

Rule Part	Equipment Class	Frequency Band (MHz)	Reference FCC ID (Parent)	Reference on test	Reference Title	FCC ID Filling (Variant)	Test on the variant	Data Referencing (Y/N)
15C	DSS (BR/EDR)	2400~2483.5	UZ7EM45B2	Full test	FR460508A	UZ7EM45B1	Spot check	Y, All test items
	DTS (BLE)	2400~2483.5	UZ7EM45B2	Full test	FR460508B	UZ7EM45B1	Spot check	Y, All test items
	DTS (WLAN)	2400~2483.5	UZ7EM45B2	Full test	FR460508C	UZ7EM45B1	Spot check	Y, All test items
	DXX (NFC)	13.56	UZ7EM45B2	Full test	FR460508D	UZ7EM45B1	Spot check	Y, All test items
15E	U-NII	5180~5240	UZ7EM45B2	Full test	FR460508E	UZ7EM45B1	Spot check	Y, All test items
		5260~5320	UZ7EM45B2	Full test	FR460508E	UZ7EM45B1	Spot check	Y, All test items
		5500~5720	UZ7EM45B2	Full test	FR460508E	UZ7EM45B1	Spot check	Y, All test items
		5745~5825	UZ7EM45B2	Full test	FR460508E	UZ7EM45B1	Spot check	Y, All test items
		5260~5320 5500~5720	UZ7EM45B2	Full test	FZ460508	UZ7EM45B1	Spot check	Y, All test items
	6CD	5925~7125	UZ7EM45B2	Full test	FR460508G FR460508H	UZ7EM45B1	Spot check	Y, All test items
22, 24, 27, 90	PCE (GSM)	GSM 850/1900	UZ7EM45B2	Full test	FG460508A	UZ7EM45B1	Spot check	Y, All test items
	PCE (WCDMA)	Band II, IV, V	UZ7EM45B2	Full test	FG460508A	UZ7EM45B1	Spot check	Y, All test items
	PCE (LTE)	B2/4/5/7/13/17/26/38/ 41/42/66/71 ULCA 5B/7C/38C 41C/66B/66C	UZ7EM45B2	Full test	FG460508B FG460508C FG460508D FG460508F	UZ7EM45B1	Spot check	Y, All test items
	PCE (LTE)	B26 (90S)	UZ7EM45B2	Full test	FG460508E	UZ7EM45B1	Spot check	Y, All test items
	PCE (NR)	n2/n5/n7/n26/ n38/n41/n66/ n71/n77/n78	UZ7EM45B2	Full test	FG460508G FG460508H FG460508J FG460508K	UZ7EM45B1	Spot check	Y, All test items
	PCE (NR)	n26 (90S)	UZ7EM45B2	Full test	FG460508I	UZ7EM45B1	Spot check	Y, All test items

Y: Pointer to spot-check exhibit; N: Pointer to full test exhibit

2.4 Spot Check Verification Data Section

All test items test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.
All test procedures follow the related section of parent report.

Spot-check measurements, while being always compliant with the applicable rule part(s) for the test under consideration, show a deviation d_{dB} from the reference data no larger than 3 dB:

$$d_{dB} = | V_{dB} – R_{dB} | \leq 3 \text{ dB} \quad (1)$$

V_{dB}, the variant spot-check level
R_{dB}, the corresponding measurement level for the reference model

An alternative to the limit of eq. (1) is available, and is based on considering how far the reference data R_{dB} is from the compliance threshold C_{dB} (also expressed in dB), for the particular test under consideration. In this case, if $M_{dB} =|C_{dB} – R_{dB}|$ is the margin in dB from the compliance limit, a spot check may be considered acceptable when the deviation ddB from the reference data satisfies the following condition:

$$d_{dB} = | V_{dB} – R_{dB} | \leq (3 + M_{dB} /20) \text{ dB , for } 0 \leq M_{dB} \leq 60 \text{ dB}$$

$$d_{dB} = | V_{dB} – R_{dB} | = 6 \text{ dB} \quad \text{, for } M_{dB} > 60 \text{ dB} \quad (2)$$

where “| |” is the absolute value of the measured quantity.
When using the option in eq. (2), d_{dB} increases linearly from 3 dB to 6 dB.

Summary for spot check for each rule entry and technology is listed as below:

Mode	Test Item	UZ7EM45B2 Parent Worst mode Test Result	UZ7EM45B1 Variant Check Test Result	Deviation (dB)	Deviation Limit (dB)
BT 1Mbps (CH00)	Number of Channels	79	79	0	3
	Hopping Channel Separation	1.135	0.996	0.139	3
	Dwell Time of Each Channel	0.31	0.31	0	3
	20dB Bandwidth	0.94	0.95	0.01	3
	99% Bandwidth	0.851	0.89	0.039	3
	Conducted Band Edges	-41.78	-43.72	1.94	3
	Conducted Spurious Emission	-44.27	-46.4	2.13	3
BT 1Mbps (CH00)	Radiated Band Edges and Radiated Spurious Emission	56.93	55.71	1.22	3
BT	AC Conducted Emission	14.81	13.96	0.85	3
BLE 1Mbps (CH39)	6dB Bandwidth	0.68	0.69	0.01	3
	99% Bandwidth	1.027	1.035	0.008	3
	Power Spectral Density	-5.44	-6.6	1.16	3
	Conducted Band Edges	-57.54	-58.86	1.32	3
	Conducted Spurious Emission	-44.23	-45.77	1.54	3
BLE 2Mbps (CH39)	Radiated Band Edges and Spurious Emission	46.49	48.90	2.41	3
BLE	AC Conducted Emission	14.81	13.96	0.85	3
WIFI 2.4G (802.11b CH11)	6dB Bandwidth	8.56	8.56	0	3
	99% Bandwidth	13.187	13.307	0.12	3
	Power Spectral Density	-1.37	-1.5	0.13	3
	Conducted Band Edges	-47.92	-48.21	0.29	3
	Conducted Spurious Emission	-43.71	-46.01	2.3	3
WIFI 2.4G (802.11g CH01)	Radiated Band Edges and Spurious Emission	51.90	52.85	1.95	3
WIFI 2.4G	AC Conducted Emission	14.81	13.96	0.85	3
WIFI 5G (802.11a CH149)	26dB Bandwidth	19.15	19.29	0.14	3
	99% Bandwidth	16.705	16.705	0	3
	Power Spectral Density	6.94	6.92	0.02	3
	Unwanted Emissions	16.31	16.33	0.02	3
WIFI 5G (11ax HE160 Ch50)	Radiated Band Edges and Spurious Emission	50.75	52.88	2.13	3
WIFI 5G	AC Conducted Emission	11.52	14.22	2.70	3
WIFI 5G (802.11a CH116)	DFS	0.862829	0.935231	0.073	3
WIFI 6G UNII-5 (802.11ax HE160 CH15 6025MHz)-6CD Indoor Client	26dB Emission Bandwidth	165.79	166.17	0.38	3
	99% Occupied Bandwidth	156.8	156.495	0.305	3
	Fundamental Maximum EIRP	17.64	17.39	0.25	3
	Fundamental Power Spectral Density	-2.95	-3.42	0.47	3
	In-Band Emissions	-12.59	-11.73	0.86	3
WIFI 6G UNII-5 (802.11ax HE20 CH1 5955MHz)-6CD Standard Client	26dB Emission Bandwidth	21.15	21.25	0.1	3
	99% Occupied Bandwidth	19.048	19.086	0.038	3
	Fundamental Maximum EIRP	17.68	17.58	0.10	3
	Fundamental Power Spectral Density	5.13	4.38	0.75	3
	In-Band Emissions	-19.18	-18.83	0.35	3
WIFI 6G UNII-5 (802.11ax HE160 CH47 6185MHz)	Contention Based Protocol	-64.77	-66.92	2.15	3

WIFI 6G (802.11ax HE20 Ch233)	Radiated Band Edges and Spurious Emission	66.90	67.00	0.1	3
WIFI 6G	AC Conducted Emission	14.72	16.18	1.46	3
NFC	20dB Spectrum Bandwidth	2.48	2.49	0.01	3
	99% OBW Spectrum Bandwidth	2.11	2.11	0	3
	Frequency Stability	-21.3496	-22.382	1.0324	3
	Field Strength of Fundamental Emissions	60.61	60.41	0.2	3
	Radiated Spurious Emissions	36.17	36.86	0.69	3
	AC Conducted Emission	14.22	16.01	1.79	3

Mode	Test Item	UZ7EM45B2 Parent Worst mode Test Result	UZ7EM45B1 Variant Check Test Result	Deviation (dB)	Deviation Limit (dB)
Part 27F LTE Band 13	Radiated Spurious Emission	-62.22	-61.76	0.46	3
Part27O_N77	Equivalent Isotropic Radiated Power	26.23	25.90	0.33	3
	Peak-to-Average Ratio	5.24	5.04	0.2	3
	Occupied Bandwidth	57.948	57.853	0.095	3
	Conducted Band Edge	-14.04	-15.20	1.16	3
	Conducted Spurious Emission	-33.15	-33.32	0.17	3
	Frequency Stability	0.0039	0.0027	0.0012	3

Conducted power for Unlicensed bands

Test Item	Mode	UZ7EM45B2 Parent Worst mode Test Result	UZ7EM45B1 Variant Check Test Result	Deviation (dB)	Deviation Limit (dB)
Conducted Power(dBm) BT & BLE	BT BR/EDR	9.57	9.11	0.46	3
	BLE 1Mbps	9.57	9.10	0.47	3
	BLE 2Mbps	9.58	9.24	0.34	3
Conducted Power(dBm) WIFI 2.4G	11b, 2.4GHz	25.04	24.97	0.07	3
	11g, 2.4GHz	28.45	28.36	0.09	3
	11n HT20, 2.4GHz	28.38	28.34	0.04	3
	11ac VHT20, 2.4GHz	28.30	28.25	0.05	3
	11ax HE20, 2.4GHz	28.56	28.51	0.05	3
Conducted Power(dBm) WIFI 5G	11a, 5.2GHz	22.53	22.38	0.15	3
	11a, 5.3GHz	22.62	22.15	0.47	3
	11a, 5.5GHz	22.19	21.74	0.45	3
	11a, 5.8GHz	21.69	21.47	0.22	3
	11n HT20, 5.2GHz	21.34	21.26	0.08	3
	11n HT20, 5.3GHz	20.98	20.62	0.36	3
	11n HT20, 5.5GHz	21.32	21.26	0.06	3
	11n HT20, 5.8GHz	21.37	21.33	0.04	3
	11ac VHT20, 5.2GHz	21.41	21.29	0.12	3
	11ac VHT20, 5.3GHz	21.04	20.69	0.35	3
	11ac VHT20, 5.5GHz	21.36	21.33	0.03	3
	11ac VHT20, 5.8GHz	21.41	21.36	0.05	3
	11ax HE20, 5.2GHz	21.47	21.34	0.13	3
	11ax HE20, 5.3GHz	21.09	20.72	0.37	3
	11ax HE20, 5.5GHz	21.39	21.37	0.02	3
	11ax HE20, 5.8GHz	21.45	21.39	0.06	3
	11n HT40, 5.2GHz	20.76	20.71	0.05	3
	11n HT40, 5.3GHz	20.71	20.53	0.18	3
	11n HT40, 5.5GHz	20.62	20.58	0.04	3

	11n HT40, 5.8GHz	20.36	20.28	0.08	3
	11ac VHT40, 5.2GHz	20.82	20.76	0.06	3
	11ac VHT40, 5.3GHz	20.77	20.56	0.21	3
	11ac VHT40, 5.5GHz	20.67	20.62	0.05	3
	11ac VHT40, 5.8GHz	20.42	20.32	0.10	3
	11ax HE40, 5.2GHz	20.86	20.81	0.05	3
	11ax HE40, 5.3GHz	20.83	20.61	0.22	3
	11ax HE40, 5.5GHz	20.73	20.68	0.05	3
	11ax HE40, 5.8GHz	20.48	20.36	0.12	3
	11ac VHT80, 5.2GHz	20.07	19.99	0.08	3
	11ac VHT80, 5.3GHz	20.14	19.91	0.23	3
	11ac VHT80, 5.5GHz	20.32	20.08	0.24	3
	11ac VHT80, 5.8GHz	20.17	20.10	0.07	3
	11ax HE80, 5.2GHz	20.12	20.05	0.07	3
	11ax HE80, 5.3GHz	20.22	19.96	0.26	3
	11ax HE80, 5.5GHz	20.38	20.12	0.26	3
	11ax HE80, 5.8GHz	20.24	20.15	0.09	3
	11ac VHT160, 5.3GHz	19.81	19.66	0.15	3
	11ac VHT160, 5.5GHz	19.79	19.63	0.16	3
	11ax HE160, 5.3GHz	19.92	19.70	0.22	3
	11ax HE160, 5.5GHz	19.88	19.69	0.19	3
Conducted Power(dBm) WIFI 6G Indoor Client	6CD 11a, U-NII-5	7.05	6.75	0.30	3
	6CD 11a, U-NII-6	7.97	7.86	0.11	3
	6CD 11a, U-NII-7	6.64	6.58	0.06	3
	6CD 11a, U-NII-8	5.82	5.78	0.04	3
	6CD 11ax HE20, U-NII-5	10.85	10.84	0.01	3
	6CD 11ax HE20, U-NII-6	11.28	11.21	0.07	3
	6CD 11ax HE20, U-NII-7	10.12	10.07	0.05	3
	6CD 11ax HE20, U-NII-8	9.61	9.57	0.04	3
	6CD 11ax HE40, U-NII-5	13.76	13.74	0.02	3
	6CD 11ax HE40, U-NII-6	13.74	13.59	0.15	3
	6CD 11ax HE40, U-NII-7	13.04	12.79	0.25	3
	6CD 11ax HE40, U-NII-8	12.65	12.60	0.05	3
	6CD 11ax HE80, U-NII-5	16.97	16.93	0.04	3
	6CD 11ax HE80, U-NII-6	16.82	16.77	0.05	3
	6CD 11ax HE80, U-NII-7	16.36	16.30	0.06	3
	6CD 11ax HE80, U-NII-8	15.76	15.71	0.05	3
	6CD 11ax HE160, U-NII-5	17.29	17.04	0.25	3
	6CD 11ax HE160, U-NII-6	17.01	16.95	0.06	3
	6CD 11ax HE160, U-NII-7	17.06	17.01	0.05	3
	6CD 11ax HE160, U-NII-8	16.89	16.83	0.06	3
Conducted Power(dBm) WIFI 6G Standard Client	6CD 11a, U-NII-5	17.29	17.21	0.08	3
	6CD 11a, U-NII-7	17.11	17.07	0.04	3
	6CD 11ax HE20, U-NII-5	17.33	17.23	0.10	3
	6CD 11ax HE20, U-NII-7	17.08	17.04	0.04	3
	6CD 11ax HE40, U-NII-5	17.23	17.16	0.07	3
	6CD 11ax HE40, U-NII-7	16.97	16.93	0.04	3
	6CD 11ax HE80, U-NII-5	17.26	17.14	0.12	3
	6CD 11ax HE80, U-NII-7	16.96	16.92	0.04	3
	6CD 11ax HE160, U-NII-5	17.34	17.10	0.24	3
	6CD 11ax HE160, U-NII-7	17.12	17.07	0.05	3

Conducted power for Licensed bands

Test Item	Mode	UZ7EM45B2 Parent Worst mode Test Result	UZ7EM45B1 Variant Check Test Result	Deviation (dB)	Deviation Limit (dB)
Conducted Power (dBm)	GSM 850	32.32	32.3	0.02	3
	GSM 1900	29.07	28.82	0.25	3
	WCDMA 850	23.02	22.87	0.15	3
	WCDMA1900	22.91	22.64	0.27	3
	WCDMA1700	22.79	22.75	0.04	3
	LTE B2	22.84	22.78	0.06	3
	LTE B4	22.89	22.45	0.44	3
	LTE B5	22.84	22.71	0.13	3
	LTE B5B	22.84	22.77	0.07	3
	LTE B13	22.78	22.63	0.15	3
	LTE B17	22.75	22.56	0.19	3
	LTE B26H	23.04	22.72	0.32	3
	LTE B26L	22.80	22.75	0.05	3
	LTE B66	22.89	22.74	0.15	3
	LTE B71	22.98	22.51	0.47	3
	LTE B7	23.83	23.48	0.35	3
	LTE B7C	23.70	23.59	0.11	3
	LTE B38	22.84	22.7	0.14	3
	LTE B41	22.89	22.66	0.23	3
	LTE B38C	22.84	22.71	0.13	3
	LTE B41C	22.88	22.78	0.1	3
	LTE B42	22.64	22.6	0.04	3
	LTE B66B	22.73	22.54	0.19	3
	LTE B66C	22.72	22.55	0.17	3
	N2	23.69	23.19	0.5	3
	N5	23.19	22.85	0.34	3
	N26H	23.22	22.93	0.29	3
	N26L	22.91	22.73	0.18	3
	N7	24.85	24.37	0.48	3
	N38	23.31	22.85	0.46	3
	N41	23.01	22.67	0.34	3
	N66	23.28	23.12	0.16	3
	N71	23.60	23.22	0.38	3
	N77 27O	26.28	25.95	0.33	3
	N78 27O	26.24	26.02	0.22	3
	N77 27Q	26.29	25.97	0.32	3
	N78 27Q	26.25	25.93	0.32	3
	N77 27O MIMIO	24.32	23.89	0.43	3
	N78 27O MIMO	23.94	23.87	0.07	3
	N77 27Q MIMO	24.38	23.92	0.46	3
	N78 27Q MIMO	24.31	23.95	0.36	3

6CD- < indoor client>

<SISO mode>

U-NII-5 SISO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
11a	6Mbps	1	093	6415	0.03	0.04	4.16	3.22	0.35	-0.85	4.51	2.37	24.00	Pass	6	6

U-NII-5 SISO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
HE20	MCS0	1	093	6415	Full	0.00	0.00	8.03	7.42	0.35	-0.85	8.38	6.57	24.00	Pass	8	8
HE40	MCS0	1	091	6405	Full	0.00	0.00	10.87	10.38	0.35	-0.85	11.22	9.53	24.00	Pass	11	11
HE80	MCS0	1	087	6385	Full	0.00	0.00	14.22	13.48	0.35	-0.85	14.57	12.63	24.00	Pass	14	14
HE160	MCS0	1	015	6025	Full	0.00	0.00	13.83	14.15	0.35	-0.85	14.18	13.30	24.00	Pass	14	14

U-NII-6 SISO																
Mod.	Data Rate	NTX	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
				Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
11a	6Mbps	1	6475	0.03	0.04	5.45	4.09	0.75	-2.44	6.20	1.65	24.00	Pass	5	5

U-NII-6 SISO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
HE20	MCS0	1	105	6475	Full	0.00	0.00	8.42	7.86	0.75	-2.44	9.17	5.42	24.00	Pass	8.5	8.5
HE40	MCS0	1	107	6485	Full	0.00	0.00	11.05	9.97	0.75	-2.44	11.80	7.53	24.00	Pass	11	11
HE80	MCS0	1	103	6465	Full	0.00	0.00	14.09	13.15	0.75	-2.44	14.84	10.71	24.00	Pass	14	14
HE160	MCS0	1	111	6505	Full	0.00	0.00	14.21	13.31	0.75	-2.44	14.96	10.87	24.00	Pass	14	14

U-NII-7 SISO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
11a	6Mbps	1	117	6535	0.03	0.04	4.25	2.69	1.02	0.16	5.27	2.85	24.00	Pass	3.5	3.5

U-NII-7 SISO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
HE20	MCS0	1	181	6855	Full	0.00	0.00	7.03	6.95	1.02	0.16	8.05	7.11	24.00	Pass	7.5	7.5
HE40	MCS0	1	147	6685	Full	0.00	0.00	10.01	9.45	1.02	0.16	11.03	9.61	24.00	Pass	10	10
HE80	MCS0	1	135	6625	Full	0.00	0.00	13.55	12.93	1.02	0.16	14.57	13.09	24.00	Pass	13.5	13.5
HE160	MCS0	1	143	6665	Full	0.00	0.00	14.25	13.54	1.02	0.16	15.27	13.70	24.00	Pass	14	14

U-NII-8 SISO															
Mod.	Data Rate	NTX	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
				Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
11a	6Mbps	1	6895	0.03	0.04	3.27	2.12	0.70	1.66	3.97	3.78	24.00	Pass	3	3

U-NII-8 SISO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
HE20	MCS0	2	185	6875	Full	0.00	0.00	6.68	6.29	0.70	1.66	7.38	7.95	24.00	Pass	7	7
HE40	MCS0	2	195	6925	Full	0.00	0.00	9.78	9.32	0.70	1.66	10.48	10.98	24.00	Pass	10	10
HE80	MCS0	2	199	6945	Full	0.00	0.00	12.75	12.58	0.70	1.66	13.45	14.24	24.00	Pass	13	13
HE160	MCS0	2	207	6985	Full	0.00	0.00	13.97	13.60	0.70	1.66	14.67	15.26	24.00	Pass	14	14

<CDD mode>

U-NII-5 MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
11a	6Mbps	2	093	6415	0.03	0.04	4.18	3.25	6.75	0.35		7.10	24.00	Pass	6	

U-NII-6 MIMO															
Mod.	Data Rate	NTX	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
				Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
11a	6Mbps	2	6475	0.03	0.04	5.49	4.11	7.86	0.75		8.61	24.00	Pass	5	

U-NII-7 MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
11a	6Mbps	2	117	6535	0.03	0.04	4.29	2.71	6.58	1.02		7.60	24.00	Pass	3.5	

U-NII-8 MIMO															
Mod.	Data Rate	NTX	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
				Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
11a	6Mbps	2	6895	0.03	0.04	3.30	2.17	5.78	1.66		7.44	24.00	Pass	3	

<SDM mode>

U-NII-5 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
HE20	MCS0	2	093	6415	Full	0.00	0.00	8.18	7.45	10.84	0.35		11.19	24.00	Pass	8	
HE40	MCS0	2	091	6405	Full	0.00	0.00	11.01	10.43	13.74	0.35		14.09	24.00	Pass	11	
HE80	MCS0	2	087	6385	Full	0.00	0.00	14.29	13.52	16.93	0.35		17.28	24.00	Pass	14	
HE160	MCS0	2	015	6025	Full	0.00	0.00	13.88	14.18	17.04	0.35		17.39	24.00	Pass	14	

U-NII-6 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
HE20	MCS0	2	105	6475	Full	0.00	0.00	8.47	7.91	11.21	0.75		11.96	24.00	Pass	8.5	
HE40	MCS0	2	107	6485	Full	0.00	0.00	11.09	10.01	13.59	0.75		14.34	24.00	Pass	11	
HE80	MCS0	2	103	6465	Full	0.00	0.00	14.24	13.22	16.77	0.75		17.52	24.00	Pass	14	
HE160	MCS0	2	111	6505	Full	0.00	0.00	14.42	13.39	16.95	0.75		17.70	24.00	Pass	14	

U-NII-7 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
HE20	MCS0	2	181	6855	Full	0.00	0.00	7.09	7.02	10.07	1.02		11.09	24.00	Pass	7.5	
HE40	MCS0	2	147	6685	Full	0.00	0.00	10.06	9.48	12.79	1.02		13.81	24.00	Pass	10	
HE80	MCS0	2	135	6625	Full	0.00	0.00	13.59	12.97	16.30	1.02		17.32	24.00	Pass	13.5	
HE160	MCS0	2	143	6665	Full	0.00	0.00	14.35	13.61	17.01	1.02		18.03	24.00	Pass	14	

U-NII-8 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
HE20	MCS0	2	185	6875	Full	0.00	0.00	6.77	6.34	9.57	1.66		11.23	24.00	Pass	7	
HE40	MCS0	2	195	6925	Full	0.00	0.00	9.81	9.35	12.60	1.66		14.26	24.00	Pass	10	
HE80	MCS0	2	199	6945	Full	0.00	0.00	12.78	12.62	15.71	1.66		17.37	24.00	Pass	13	
HE160	MCS0	2	207	6985	Full	0.00	0.00	14.01	13.63	16.83	1.66		18.49	24.00	Pass	14	

<standard client >

<SISO mode>

U-NII-5 SISO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
11a	6Mbps	1	001	5955	0.03	0.04	14.19	14.13	0.35	-0.85	14.54	13.28	30.00	Pass	14	

U-NII-5 SISO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
HE20	MCS0	1	001	5955	Full	0.00	0.00	14.21	14.22	0.35	-0.85	14.56	13.37	30.00	Pass	14	14
HE40	MCS0	1	003	5965	Full	0.00	0.00	14.17	14.05	0.35	-0.85	14.52	13.20	30.00	Pass	14	14
HE80	MCS0	1	007	5985	Full	0.00	0.00	14.16	14.06	0.35	-0.85	14.51	13.21	30.00	Pass	14	14
HE160	MCS0	1	015	6025	Full	0.00	0.00	13.83	14.15	0.35	-0.85	14.18	13.30	30.00	Pass	14	14

U-NII-7 SISO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
11a	6Mbps	1	149	6695	0.03	0.04	14.27	13.78	1.02	0.16	15.29	13.94	30.00	Pass	14	14

U-NII-7 SISO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10	Ant 8	Ant 10			Ant 8	Ant 10
HE20	MCS0	1	149	6695	Full	0.00	0.00	14.22	13.78	1.02	0.16	15.24	13.94	30.00	Pass	14	14
HE40	MCS0	1	147	6685	Full	0.00	0.00	14.29	13.43	1.02	0.16	15.31	13.59	30.00	Pass	14	14
HE80	MCS0	1	135	6625	Full	0.00	0.00	14.27	13.47	1.02	0.16	15.29	13.63	30.00	Pass	14	14
HE160	MCS0	1	143	6665	Full	0.00	0.00	14.25	13.54	1.02	0.16	15.27	13.70	30.00	Pass	14	14

<CDD mode>

U-NII-5 MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
11a	6Mbps	2	001	5955	0.03	0.04	14.22	14.17	17.21	0.35		17.56	30.00	Pass	14	

U-NII-5 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
HE20	MCS0	2	001	5955	Full	0.00	0.00	14.24	14.19	17.23	0.35		17.58	30.00	Pass	14	
HE40	MCS0	2	003	5965	Full	0.00	0.00	14.22	14.07	17.16	0.35		17.51	30.00	Pass	14	
HE80	MCS0	2	007	5985	Full	0.00	0.00	14.17	14.09	17.14	0.35		17.49	30.00	Pass	14	
HE160	MCS0	2	015	6025	Full	0.00	0.00	13.95	14.23	17.10	0.35		17.45	30.00	Pass	14	

U-NII-7 MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
					Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
11a	6Mbps	2	149	6695	0.03	0.04	14.31	13.80	17.07	1.02		18.09	30.00	Pass	14	

U-NII-7 MIMO																	
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	RU Config.	Duty Factor (dB)		Conducted Power with duty factor (dBm)			DG (dBi)		EIRP Power (dBm)	EIRP Power Limit (dBm)	Pass /Fail	Power Setting	
						Ant 8	Ant 10	Ant 8	Ant 10	SUM	Ant 8	Ant 10	SUM			Ant 8	Ant 10
HE20	MCS0	2	149	6695	Full	0.00	0.00	14.24	13.81	17.04	1.02		18.06	30.00	Pass	14	
HE40	MCS0	2	147	6685	Full	0.00	0.00	14.32	13.48	16.93	1.02		17.95	30.00	Pass	14	
HE80	MCS0	2	135	6625	Full	0.00	0.00	14.29	13.49	16.92	1.02		17.94	30.00	Pass	14	
HE160	MCS0	2	143	6665	Full	0.00	0.00	14.39	13.71	17.07	1.02		18.09	30.00	Pass	14	

Conclusion:
All test items test against the variant model based on the worst-case condition from the original model was performed in this filing to demonstrate the test data from original model remains representative for the variant model.

Based on the spot check test result, the test data from the original model is representative for the variant model. All spot check test data are shown within expected level compliant to limit line.

We are using power and ERP/EIRP measurements from the original parent model reports to list on the grant.

The same detection mechanism/software/antenna gain is used in the variant of DFS. Hence, all test cases refer to parent report.

We confirm that the test data referencing policy of FCC KDB 484596 D01 Referencing Test Data v02r03 has been followed and the test data as referenced from the parent model report represents compliance with new FCC ID.

3 List of Measuring Equipment

For BT/WIFI:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	Keysight	N9038A	MY56400023	3Hz~8.5GHz;Max 30dBm	Jan. 02, 2024	Nov. 06, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY57471084	10Hz-44GHz	Jul. 04, 2024	Nov. 06, 2024	Jul. 03, 2025	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 08, 2024	Nov. 06, 2024	Sep. 07, 2025	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	59913	30MHz-1GHz	Sep. 03, 2024	Nov. 06, 2024	Sep. 02, 2025	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 11, 2024	Nov. 06, 2024	Apr. 10, 2025	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 06, 2024	Nov. 06, 2024	Jan. 05, 2025	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	372171	9KHz ~1GHZ	Jan. 02, 2024	Nov. 06, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
Amplifier	EM	EM18G40GA	060728	18~40GHz	Jan. 02, 2024	Nov. 06, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2082395	1Ghz-18Ghz	Jan. 02, 2024	Nov. 06, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY57280119	500MHz~26.5GHz	Oct. 09, 2024	Nov. 06, 2024	Oct. 08, 2025	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Nov. 06, 2024	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Nov. 06, 2024	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Nov. 06, 2024	NCR	Radiation (03CH06-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 18, 2024	Oct. 27, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Aug. 20, 2024	Oct. 27, 2024	Aug. 19, 2025	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 18, 2024	Oct. 27, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 09, 2024	Oct. 27, 2024	Oct. 08, 2025	Conduction (CO01-KS)
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 10, 2024	Nov. 07, 2024~ Feb. 11, 2025	Oct. 09, 2025	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2024	Nov. 07, 2024~ Feb. 11, 2025	Jan. 01, 2025	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2025		Jan. 01, 2026	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Nov. 07, 2024~ Feb. 11, 2025	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2025		Jan. 01, 2026	Conducted (TH01-KS)
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 10, 2024	Nov. 05, 2024	Oct. 09, 2025	CBP (DFS01-KS)
MXG-B RF Vector Signal Genertor	Keysight	5182B /5182BX07	MY56200417/MY59360210	9kHz~7.2GHz	Apr. 17, 2024	Nov. 05, 2024	Apr. 16, 2025	CBP (DFS01-KS)
Vector Signal Generator	R&S	SMBV100A	258305	9kHz~6GHz	Jan. 02, 2024	Nov. 05, 2024	Jan. 01, 2025	CBP (DFS01-KS)
Combiner	MTJ Cooperation	MTJ7112	N/A	0.4-6GHz	NCR	Nov. 05, 2024	NCR	CBP (DFS01-KS)
Signal Analyzer	R&S	FSV7	101632	10Hz~7GHz	Jan. 02, 2024	Nov. 05, 2024	Jan. 01, 2025	DFS (DFS01-KS)
Vector Signal Generator	R&S	SMJ100A	101908	100kHz~6GHz	Jan. 02, 2024	Nov. 05, 2024	Jan. 01, 2025	DFS (DFS01-KS)
MXG-B RF Vector Signal Genertor	Keysight	5182B /5182BX07	MY56200417/MY59360210	9kHz~7.2GHz	Apr. 17, 2024	Nov. 05, 2024	Apr. 16, 2025	DFS (DFS01-KS)

Combiner	MTJ Cooperation	MTJ7114-M	N/A	0.5GHz~18GHz	NCR	Nov. 05, 2024	NCR	DFS (DFS01-KS)

NCR: No Calibration Required

For NFC:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
EMI Test Receiver	R&S	ESR7	101403	9kHz~7GHz;Max 30dBm	Oct. 11, 2024	Oct. 24, 2024	Oct. 10, 2025	Radiation (03CH02-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 08, 2024	Oct. 24, 2024	Sep. 07, 2025	Radiation (03CH02-KS)
Bilog Antenna	TeseQ	CBL6111D	59915	30MHz-1GHz	Aug. 18, 2024	Oct. 24, 2024	Aug. 17, 2025	Radiation (03CH02-KS)
AC Power Source	Chroma	61601	616010002473	N/A	NCR	Oct. 24, 2024	NCR	Radiation (03CH02-KS)
Turn Table	MF	MF7802	N/A	0~360 degree	NCR	Oct. 24, 2024	NCR	Radiation (03CH02-KS)
Antenna Mast	MF	MF7802	N/A	1 m~4 m	NCR	Oct. 24, 2024	NCR	Radiation (03CH02-KS)
Amplifier	SONOMA	310N	413740	9KHz-1GHz	Jan. 03, 2024	Oct. 24, 2024	Jan. 02, 2025	Radiation (03CH02-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr. 18, 2024	Oct. 26, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Aug. 20, 2024	Oct. 26, 2024	Aug. 19, 2025	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr. 18, 2024	Oct. 26, 2024	Apr. 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 09, 2024	Oct. 26, 2024	Oct. 08, 2025	Conduction (CO01-KS)
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 10, 2024	Nov. 07, 2024	Oct. 09, 2025	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2024	Nov. 07, 2024	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Nov. 07, 2024	Jan. 01, 2025	Conducted (TH01-KS)

NCR: No Calibration Required

For WWAN Bands:

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 10, 2024	Nov. 04, 2024	Oct. 09, 2025	Conducted (TH01-KS)
Power divider	STI	STI08-0055	-	0.5~40GHz	NCR	Nov. 04, 2024	NCR	Conducted (TH01-KS)
Temperature &humidity chamber	Hongzhan	LP-150U	H2014011440	-40~+150°C 20%~95%RH	Jul. 05, 2023	Nov. 04, 2024	Jul. 04, 2024	Conducted (TH01-KS)
EXA Spectrum Analyzer	Keysight	N9010A	MY55370528	10Hz-44G,MAX 30dB	Oct. 11, 2024	Oct. 20, 2024	Oct. 10, 2025	Radiation (03CH04-KS)
Bilog Antenna	TeseQ	CBL6111D	44483	30MHz-1GHz	Dec. 06, 2023	Oct. 20, 2024	Dec. 05, 2024	Radiation (03CH04-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00227860	1GHz~18GHz	Aug. 16, 2024	Oct. 20, 2024	Aug. 15, 2025	Radiation (03CH04-KS)
SHF-EHF Horn	Com-power	AH-840	101070	18GHz~40GHz	Jan. 27, 2024	Oct. 20, 2024	Jan. 26, 2025	Radiation (03CH04-KS)
Amplifier	SONOMA	310N	413740	9KHz-1GHz	Jan. 03, 2024	Oct. 20, 2024	Jan. 02, 2025	Radiation (03CH04-KS)
Amplifier	EM	EM18G40GA	060728	18~40GHz	Jan. 02, 2024	Oct. 20, 2024	Jan. 01, 2025	Radiation (03CH04-KS)
high gain Amplifier	EM	EM01G18GA	060840	1Ghz-18Ghz	Oct. 09, 2024	Oct. 20, 2024	Oct. 08, 2025	Radiation (03CH04-KS)
Amplifier	EM	EM01G18GA	060892	1Ghz-18Ghz	Oct. 09, 2024	Oct. 20, 2024	Oct. 08, 2025	Radiation (03CH04-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Oct. 20, 2024	NCR	Radiation (03CH04-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Oct. 20, 2024	NCR	Radiation (03CH04-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Oct. 20, 2024	NCR	Radiation (03CH04-KS)
Signal Analyzer	R&S	FSV7	101472	10Hz~7GHz	Jan. 05, 2024	Nov. 12, 2024	Jan. 04, 2025	Conducted (DFS01-KS)
Combiner	MTJ Cooperation	MTJ7112	N/A	0.4-6GHz	NCR	Nov. 12, 2024	NCR	Conducted (DFS01-KS)

NCR: No Calibration Required

4 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.26-2015. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Measurement (BT/WIFI2.4G/5G)

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±2.22 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.50 dB
Conducted Power Spectral Density	±0.90 dB
Frequency	±0.04 ppm

Uncertainty of Conducted Measurement(WIFI 6G)

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±2.22 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.50 dB
Conducted Power Spectral Density	±0.90 dB
Frequency	0.04ppm
Conducted Generated signal Levels	±0.56 dB
Conducted Time	0.54%

Uncertainty of Conducted Measurement(NFC)

Test Item	Uncertainty
Occupied Channel Bandwidth	±0.1%
Frequency	0.04ppm

Uncertainty of Conducted Measurement (DFS)

Test Item	Uncertainty
Conducted Generated signal Levels	±0.56 dB
Conducted Time	0.38%

Uncertainty of Conducted Measurement (WWAN)

Test Item	Uncertainty
Conducted Spurious Emission & Bandedge	±2.22 dB
Occupied Channel Bandwidth	±0.1%
Conducted Power	±0.50 dB
Peak to Average Ratio	±0.46 dB
Frequency Stability	±0.04 ppm

Uncertainty of AC Conducted Emission Measurement (0.15 MHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.84 dB

03CH06-KS(BT/WIF):

Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.30dB

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.08dB

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.18dB

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	5.22dB

03CH02-KS(NFC):

Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	3.30dB

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	6.04dB

03CH04-KS(WWAN):

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.83 dB

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.83 dB

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	2.82 dB

---------- THE END ----------

Appendix B. Reference Report

FCC RF Test Report

FCC ID	:	UZ7EM45B2
EQUIPMENT	:	Enterprise Mobile
BRAND NAME	:	Zebra
MODEL NAME	:	EM45B2
APPLICANT	:	Zebra Technologies Corporation 3 Overlook Point, Lincolnshire, IL 60069 USA
MANUFACTURER		Zebra Technologies Corporation 3 Overlook Point, Lincolnshire, IL 60069 USA
STANDARD	:	FCC Part 15 Subpart C §15.247
CLASSIFICATION	:	(DSS) Spread Spectrum Transmitter
TEST DATE(S)	:	Jul. 19, 2024 ~ Aug. 24, 2024

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.

Jason Jia

Approved by: Jason Jia

ACCREDITED
Cert #5145.02

Sporton International Inc. (Kunshan)
No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FR460508A	Rev. 01	Initial issue of report	Sep. 11, 2024

SUMMARY OF TEST RESULT

Report Section	FCC Rule	Description	Limit	Result	Remark
3.1	15.247(a)(1)	Number of Channels	≥ 15Chs	Pass	-
3.2	15.247(a)(1)	Hopping Channel Separation	≥ 2/3 of 20dB BW	Pass	-
3.3	15.247(a)(1)	Dwell Time of Each Channel	≤ 0.4sec in 31.6sec period	Pass	-
3.4	15.247(a)(1)	20dB Bandwidth	-	Report only	-
3.4	-	99% Bandwidth	-	Report only	-
3.5	15.247(b)(1)	Peak Output Power	≤ 125 mW	Pass	-
3.6	15.247(d)	Conducted Band Edges	≤ 20dBc	Pass	-
3.7	15.247(d)	Conducted Spurious Emission	≤ 20dBc	Pass	-
3.8	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	15.209(a) & 15.247(d)	Pass	Under limit 17.07 dB at 2363.17 MHz
3.9	15.207	AC Conducted Emission	15.207(a)	Pass	Under limit 14.81 dB at 2.50 MHz
3.10	15.203 & 15.247(b)	Antenna Requirement	15.203 & 15.247(b)	Pass	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
Equipment	Enterprise Mobile
Brand Name	Zebra
Model Name	EM45B2
FCC ID	UZ7EM45B2
HW Version	EV2.5
SW Version	13-32-02.00-TG-U06-STD-ATH-04
MFD	02AUG24
EUT Stage	Identical Prototype

Remark: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Specification of Accessory				
Battery	**Brand Name**	Zebra	**Model**	BT-000501
			Part Number	BT-000501-2000

Supported Unit used in test configuration and system				
AC Adapter 1 (Type C Wall Charger 1)	**Brand Name**	Zebra	**Model**	SAWA-102-22520A
			Part Number	PWR-WUA5V45W1US
AC Adapter 2 (Type A Wall Charger 2)	**Brand Name**	Zebra	**Model**	SAWA-65-20005A
			Part Number	PWR-WUA5V12W0US
Earphone 1 (Wired headset USB-C)	**Brand Name**	Zebra	**Part Number**	HDST-USBC-PTT1-01
Earphone 2 (Rugged Bluetooth Headset)	**Brand Name**	Zebra	**Part Number**	HS3100-OTH
Earphone 3 (3.5mm PTT Headset)	**Brand Name**	Zebra	**Part Number**	HDST-35MM-PTT1-02
Earphone 4 (Rugged Headset)	**Brand Name**	Zebra	**Part Number**	HS2100-OTH
3.5mm to 3.5mm audio connector	**Brand Name**	Zebra	**Part Number**	CBL-HS2100-3MS1-01
Type C-Audio Cable (Type C to 3.5mm)	**Brand Name**	Zebra	**Part Number**	ADP-USBC-35MM1-01
USB Cable 1 (USB-C to C Cable)	**Brand Name**	Zebra	**Part Number**	CBL-EC5X-USBC3A-01
USB Cable 2 (USB-A to C Cable)	**Brand Name**	Zebra	**Part Number**	CBL-TC5X-USBC2A-01
EM45 Protective Case	**Brand Name**	Zebra	**Part Number**	SG-EM45EXO1-01

1.2 Product Specification of Equipment Under Test

Standards-related Product Specification	
Tx/Rx Frequency Range	2402 MHz ~ 2480 MHz
Number of Channels	79
Carrier Frequency of Each Channel	2402+n*1 MHz; n=0~78
Maximum Output Power to Antenna	**<Class 1>** Bluetooth BR(1Mbps) : 9.57 dBm (0.0091 W) Bluetooth EDR (2Mbps) : 9.14 dBm (0.0082 W) Bluetooth EDR (3Mbps) : 9.39 dBm (0.0087 W) **<Class 2>** Bluetooth BR(1Mbps) : 3.56 dBm (0.0023 W) Bluetooth EDR (2Mbps) : 2.98 dBm (0.0020 W) Bluetooth EDR (3Mbps) : 3.36 dBm (0.0022 W)
99% Occupied Bandwidth	**<Class 1>** Bluetooth BR(1Mbps) : 0.896 MHz Bluetooth EDR (2Mbps) : 1.181 MHz Bluetooth EDR (3Mbps) : 1.163 MHz **<Class 2>** Bluetooth BR(1Mbps) : 0.833 MHz Bluetooth EDR (2Mbps) : 1.166 MHz Bluetooth EDR (3Mbps) : 1.151 MHz
Antenna Type / Gain	IFA Antenna type with gain 0.28 dBi
Type of Modulation	Bluetooth BR (1Mbps) : GFSK Bluetooth EDR (2Mbps) :π/4-DQPSK Bluetooth EDR (3Mbps) : 8-DPSK

Note: For Bluetooth Class 1 and Class 2, conducted items full test Class 1 and Class 2, RSE item full test Class 1 to cover Class 2.

1.3 Modification of EUT

No modifications are made to the EUT during all test items.

1.4 Testing Location

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	CO01-KS 03CH06-KS TH01-KS	CN1257	314309

1.5 Test Software

Item	Site	Manufacturer	Name	Version
1.	TH01-KS	Tonscend	JS1120-3 test system China_210602	3.3.10
2.	03CH06-KS	AUDIX	E3	210616
3.	CO01-KS	AUDIX	E3	6.2009-8-24

1.6 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR Part 15 Subpart C §15.247
- FCC KDB 558074 D01 15.247 Meas Guidance v05r02
- ANSI C63.10-2013

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Carrier Frequency Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	0	2402	27	2429	54	2456
	1	2403	28	2430	55	2457
	2	2404	29	2431	56	2458
	3	2405	30	2432	57	2459
	4	2406	31	2433	58	2460
	5	2407	32	2434	59	2461
	6	2408	33	2435	60	2462
	7	2409	34	2436	61	2463
	8	2410	35	2437	62	2464
	9	2411	36	2438	63	2465
	10	2412	37	2439	64	2466
	11	2413	38	2440	65	2467
	12	2414	39	2441	66	2468
	13	2415	40	2442	67	2469
	14	2416	41	2443	68	2470
	15	2417	42	2444	69	2471
	16	2418	43	2445	70	2472
	17	2419	44	2446	71	2473
	18	2420	45	2447	72	2474
	19	2421	46	2448	73	2475
	20	2422	47	2449	74	2476
	21	2423	48	2450	75	2477
	22	2424	49	2451	76	2478
	23	2425	50	2452	77	2479
	24	2426	51	2453	78	2480
	25	2427	52	2454	-	-
	26	2428	53	2455	-	-

2.2 Test Mode

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower). For radiated measurement, pre-scanned in three orthogonal panels, X, Y, Z. The worst cases (X plane) were recorded in this report, and the worst mode of radiated spurious emissions is Bluetooth 1Mbps mode, and recorded in this report.

b. AC power line Conducted Emission was tested under maximum output power.

The following summary table is showing all test modes to demonstrate in compliance with the standard.

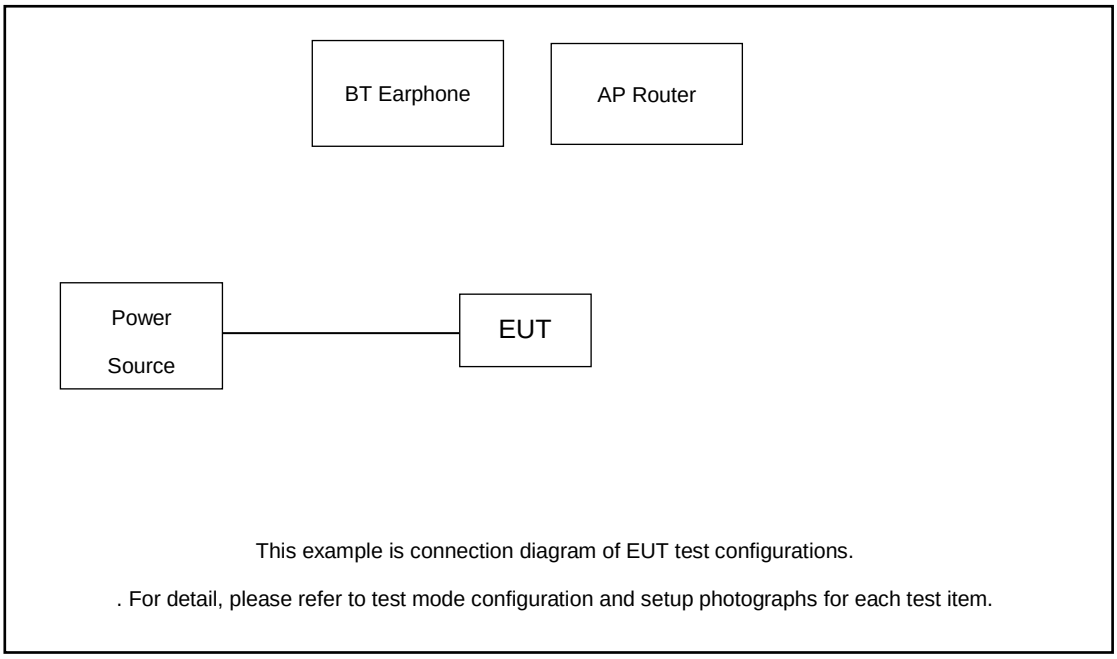
Summary table of Test Cases			
Test Item	**Data Rate / Modulation**		
	Bluetooth BR 1Mbps GFSK	**Bluetooth EDR 2Mbps π/4-DQPSK**	**Bluetooth EDR 3Mbps 8-DPSK**
Conducted Test Cases	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz	Mode 4: CH00_2402 MHz Mode 5: CH39_2441 MHz Mode 6: CH78_2480 MHz	Mode 7: CH00_2402 MHz Mode 8: CH39_2441 MHz Mode 9: CH78_2480 MHz
Radiated Test Cases	**Bluetooth BR 1Mbps GFSK**		
	Mode 1: CH00_2402 MHz Mode 2: CH39_2441 MHz Mode 3: CH78_2480 MHz		
AC Conducted Emission	Mode 1 : WLAN 2.4G Link + BT Link + AC Adapter 1 + USB Cable1 + Battery		

Remark:

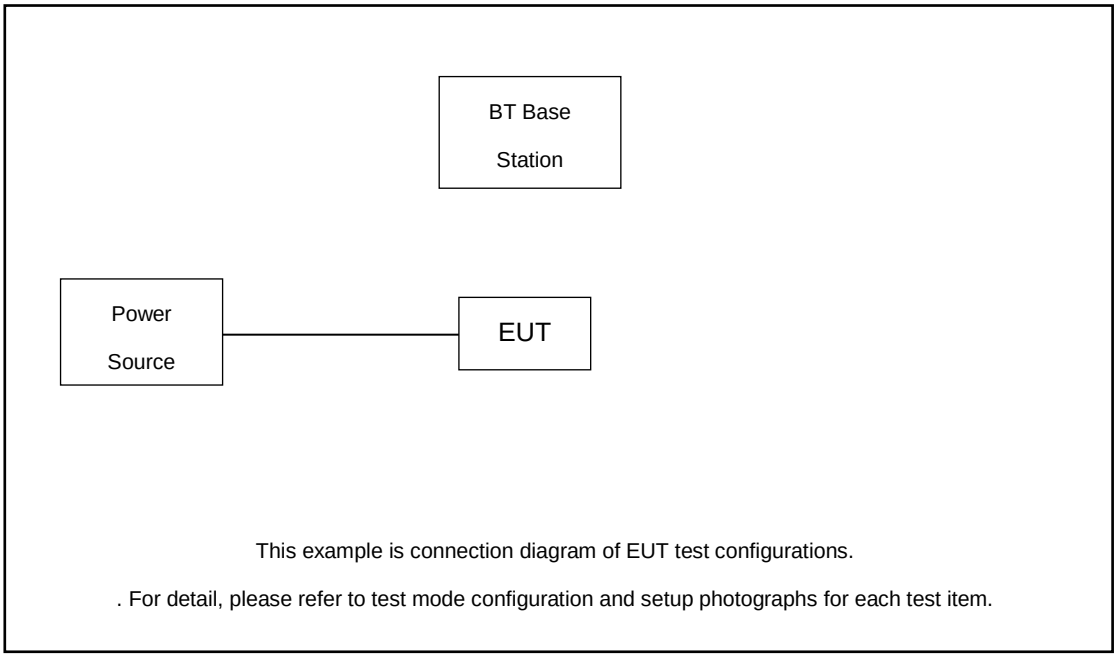
1. For radiated test cases, the worst mode data rate 1Mbps was reported only, because this data rate has the highest RF output power at preliminary tests, and no other significantly frequencies found in conducted spurious emission.
2. For Radiated Test Cases, The tests were performed with Adapter 1 and USB Cable 1.

2.3 Connection Diagram of Test System

AC Conducted Emission:



Radiated Emission:



2.4 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	BT Base Station	R&S	CBT	N/A	N/A	Unshielded, 1.8m
2.	WLAN AP	D-link	DIR-655	KA21R655B1	N/A	Unshielded,1.8m
3.	Notebook	Lenovo	G480	QDS-BRCM1050I	N/A	Unshielded AC I/P cable 1.8m

2.5 EUT Operation Test Setup

For Bluetooth function, the engineering test program was provided and enabled to make EUT connect with Bluetooth base station to continuous transmit.

For AC power line conducted emissions, the EUT was set to connect with the WLAN AP under large package sizes transmission.

2.6 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

Example :

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 5.6 dB.

Offset(dB) = RF cable loss(dB) .

= 5.6 (dB)

3 Test Result

3.1 Number of Channel Measurement

3.1.1 Limits of Number of Hopping Frequency

Frequency hopping systems in the 2400-2483.5 MHz band shall use at least 15 channels.

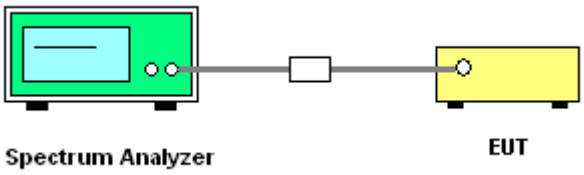
3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.1.3 Test Procedure

1. The testing follows ANSI C63.10-2013 clause 7.8.3.
2. 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.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings: Span = the frequency band of operation; RBW = 300kHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
6. The number of hopping frequency used is defined as the number of total channel.
7. Record the measurement data derived from spectrum analyzer.

3.1.4 Test Setup



3.1.5 Test Result of Number of Hopping Frequency

Please refer to Appendix A.

3.2 Hopping Channel Separation Measurement

3.2.1 Limit of Hopping Channel Separation

Frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

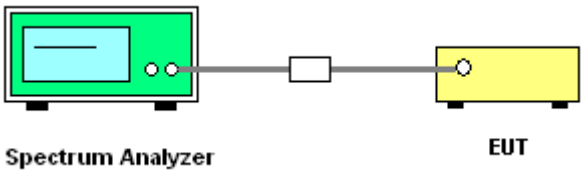
3.2.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.2.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.2.
2. 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.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings:
   Span = wide enough to capture the peaks of two adjacent channels;
   RBW = 300kHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold.
6. Measure and record the results in the test report.

3.2.4 Test Setup



3.2.5 Test Result of Hopping Channel Separation

Please refer to Appendix A.

3.3 Dwell Time Measurement

3.3.1 Limit of Dwell Time

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

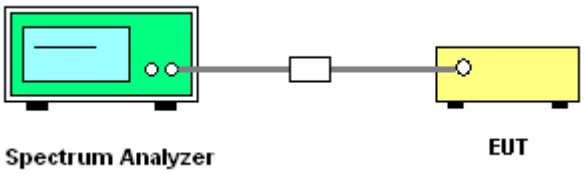
3.3.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.3.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.4.
2. 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.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Enable the EUT hopping function.
5. Use the following spectrum analyzer settings: Span = zero span, centered on a hopping channel; RBW = 1 MHz; VBW ≥ RBW; Sweep = as necessary to capture the entire dwell time per hopping channel; Detector function = peak; Trace = max hold.
6. Measure and record the results in the test report.

3.3.4 Test Setup



3.3.5 Test Result of Dwell Time

Please refer to Appendix A.

3.4 20dB and 99% Bandwidth Measurement

3.4.1 Limit of 20dB and 99% Bandwidth

Reporting only

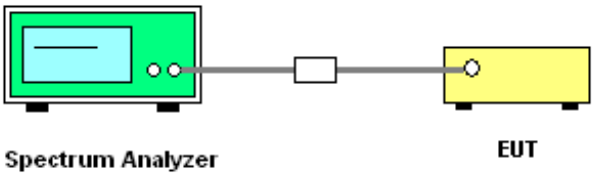
3.4.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.4.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 6.9.2 and 6.9.3.
2. 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.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. 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;
   The RBW is set to 1% to 5% of the 99% OBW, the VBW is set to 3 times the RBW;
   Sweep = auto; Detector function = peak;
   Trace = max hold.
5. Use the following spectrum analyzer settings for 99 % Bandwidth measurement.
   Span = approximately 1.5 to 5 times the 99% bandwidth, centered on a hopping channel;
   The RBW is set to 1% to 5% of the 99% OBW, the VBW is set to 3 times the RBW;
   Sweep = auto; Detector function = peak;
   Trace = max hold.
6. Measure and record the results in the test report.

3.4.4 Test Setup



3.4.5 Test Result of 20dB and 99% Occupied Bandwidth

Please refer to Appendix A.

3.5 Output Power Measurement

3.5.1 Limit of Output Power

The maximum peak conducted output power of the intentional radiator shall not exceed the following: For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band 0.125 watts. The power limit for 1Mbps, 2Mbps, 3Mbps and AFH modes are 0.125 watts.

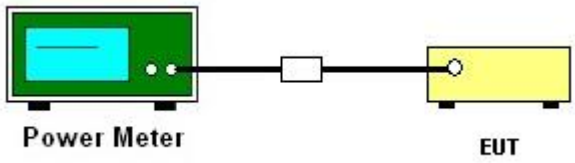
3.5.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.5.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.5.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Measure the conducted output power with cable loss and record the results in the test report.
5. Measure and record the results in the test report.

3.5.4 Test Setup



3.5.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.6 Conducted Band Edges Measurement

3.6.1 Limit of Band Edges

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

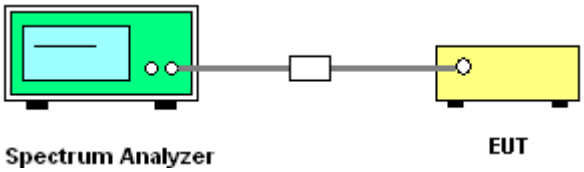
3.6.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.6.3 Test Procedures

1. The testing follows ANSI C63.10-2013 clause 7.8.6.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100kHz, VBW = 300kHz. Band edge emissions must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100kHz RBW. The attenuation shall be 30 dB instead of 20 dB when RMS conducted output power procedure is used.
4. Enable hopping function of the EUT and then repeat step 2. and 3.
5. Measure and record the results in the test report.

3.6.4 Test Setup



3.6.5 Test Result of Conducted Band Edges

Please refer to Appendix A.

3.6.6 Test Result of Conducted Hopping Mode Band Edges

Please refer to Appendix A.

3.7 Conducted Spurious Emission Measurement

3.7.1 Limit of Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiation frequency band, the radio frequency power shall be at least 20 dB below the highest level of the radiated power. In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

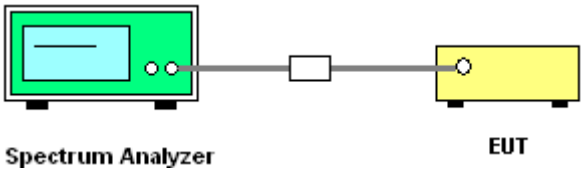
3.7.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.7.3 Test Procedure

1. The testing follows ANSI C63.10-2013 clause 7.8.8.
2. 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.
3. Set to the maximum power setting and enable the EUT transmit continuously.
4. Set RBW = 100 kHz, VBW = 300kHz, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.
5. Measure and record the results in the test report.
6. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

3.7.4 Test Setup



3.7.5 Test Result of Conducted Spurious Emission

Please refer to Appendix A.

3.8 Radiated Band Edges and Spurious Emission Measurement

3.8.1 Limit of Radiated Band Edges and Spurious Emission

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (MHz)	Field Strength (microvolts/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

3.8.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

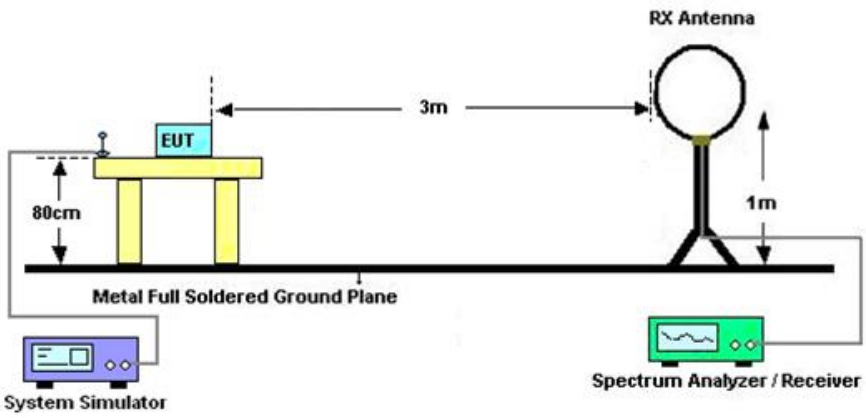
3.8.3 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz respectively above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
4. Set to the maximum power setting and enable the EUT transmit continuously.
5. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW=100 kHz for f < 1 GHz, RBW=1MHz for f>1GHz ; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold for peak
   (3) For average measurement: use duty cycle correction factor method per 15.35(c).
   Duty cycle = On time/100 milliseconds
   On time = $N_1*L_1+N_2*L_2+...+N_{n-1}*LN_{n-1}+N_n*L_n$
   Where N_1 is number of type 1 pulses, L_1 is length of type 1 pulses, etc.
   Average Emission Level = Peak Emission Level + 20*log(Duty cycle)
6. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
7. For testing below 1GHz, if the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the CISPR quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than peak limit (that means the emission level in average mode also complies with the limit in average mode), then peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

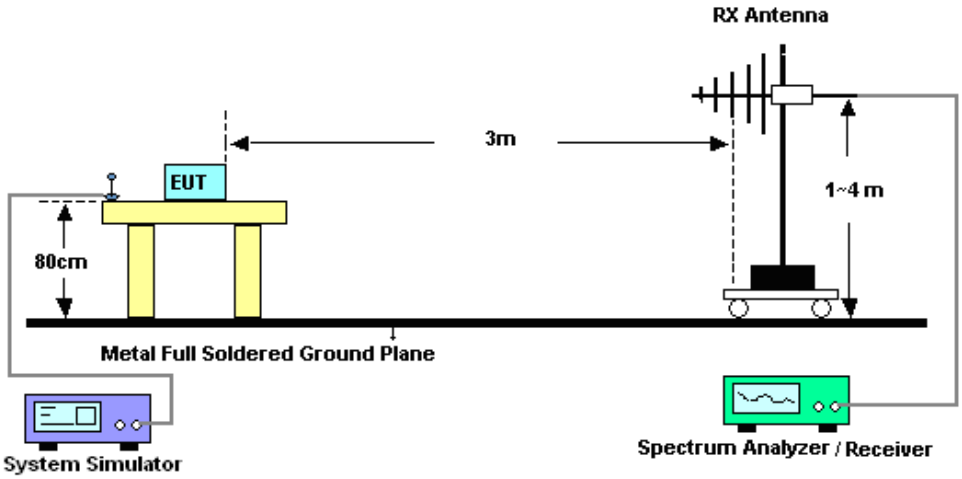
Note: The average levels were calculated from the peak level corrected with duty cycle correction factor (-24.79dB) derived from 20log (dwell time/100ms). This correction is only for signals that hop with the fundamental signal, such as band-edge and harmonic. Other spurious signals that are independent of the hopping signal would not use this correction.

3.8.4 Test Setup

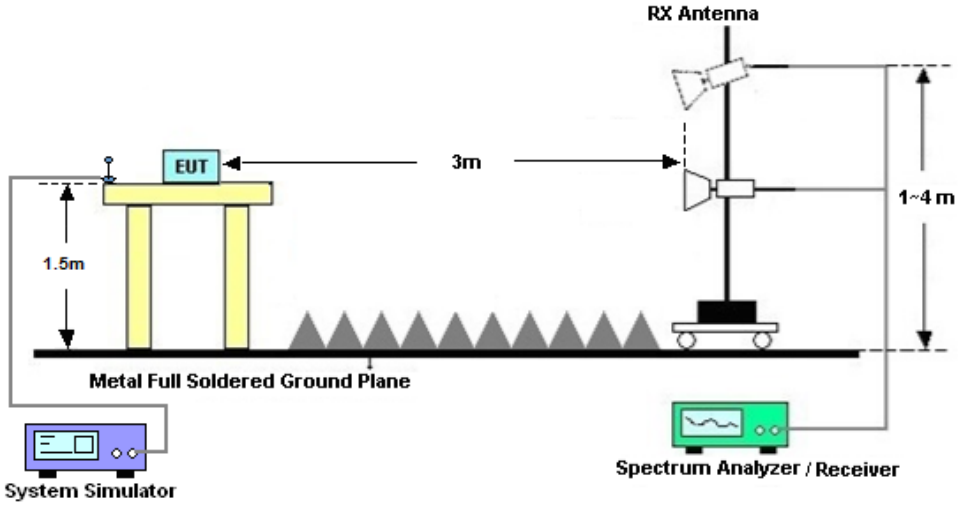
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



3.8.5 Test Results of Radiated Spurious Emissions (9 kHz ~ 30 MHz)

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

3.8.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C

3.8.7 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic or 40GHz, whichever is lower)

Please refer to Appendix C

3.8.8 Duty cycle correction factor for average measurement

Please refer to Appendix D.

3.9 AC Conducted Emission Measurement

3.9.1 Limit of AC Conducted Emission

For equipment 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 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	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.

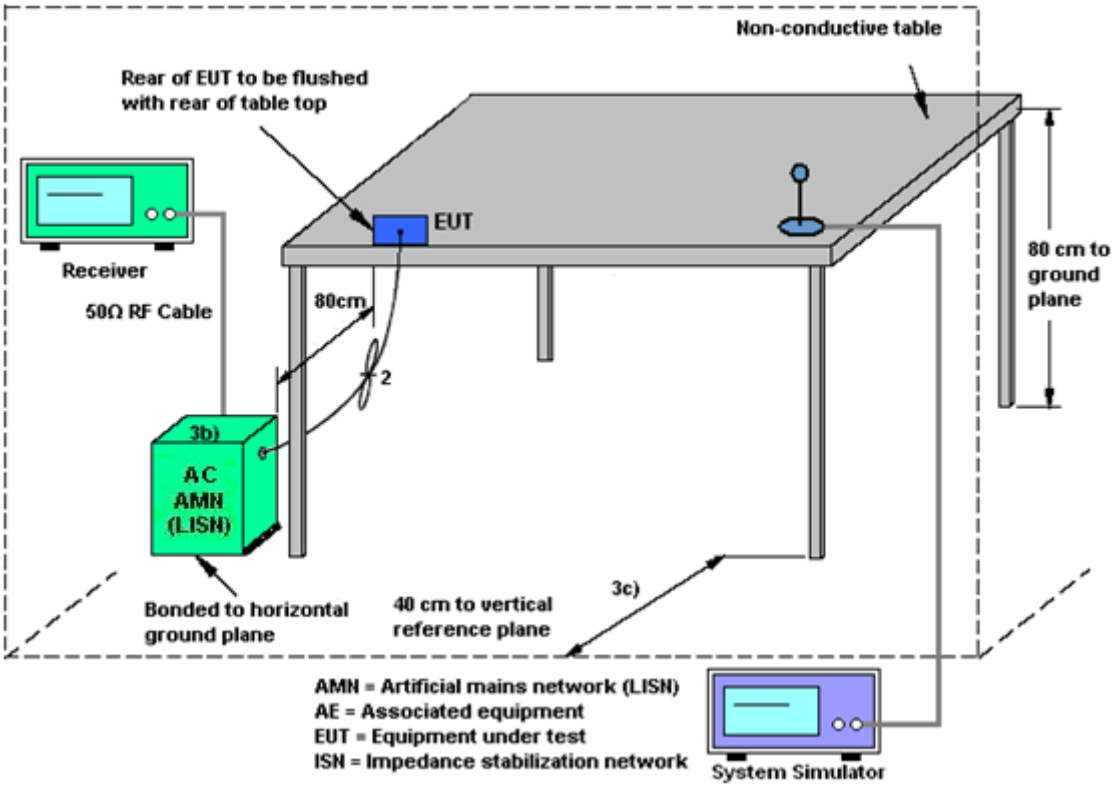
3.9.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

3.9.3 Test Procedures

1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
6. Both sides of AC line were checked for maximum conducted interference.
7. The frequency range from 150 kHz to 30 MHz was searched.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

3.9.4 Test Setup



3.9.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.10 Antenna Requirements

3.10.1 Standard Applicable

If directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi. 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 rule.

3.10.2 Antenna Anti-Replacement Construction

An embedded-in antenna design is used.

3.10.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSV40	101040	10Hz~40GHz	Oct. 11, 2023	Jul. 19, 2024 ~Aug. 24, 2024	Oct. 10, 2024	Conducted (TH01-KS)
Pulse Power Senor	Anritsu	MA2411B	0917070	300MHz~40GHz	Jan. 02, 2024	Jul. 19, 2024 ~Aug. 24, 2024	Jan. 01, 2025	Conducted (TH01-KS)
Power Meter	Anritsu	ML2495A	1005002	50MHz Bandwidth	Jan. 02, 2024	Jul. 19, 2024 ~Aug. 24, 2024	Jan. 01, 2025	Conducted (TH01-KS)
EMI Test Receiver	Keysight	N9038A	MY56400023	3Hz~8.5GHz;Max 30dBm	Jan. 02, 2024	Jul. 25, 2024 ~Aug12, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
EXA Spectrum Analyzer	Keysight	N9010B	MY60242126	10Hz-44GHz	Oct. 11, 2023	Jul. 25, 2024 ~Aug12, 2024	Oct. 10, 2024	Radiation (03CH06-KS)
Loop Antenna	R&S	HFH2-Z2E	101125	9kHz~30MHz	Sep. 11, 2023	Jul. 25, 2024 ~Aug12, 2024	Sep. 10, 2024	Radiation (03CH06-KS)
Bilog Antenna	TeseQ	CBL6111D	59915	30MHz-1GHz	Aug. 19, 2023	Jul. 25, 2024 ~Aug12, 2024	Aug. 18, 2024	Radiation (03CH06-KS)
Double Ridge Horn Antenna	ETS-Lindgren	3117	00218652	1GHz~18GHz	Apr. 11, 2024	Jul. 25, 2024 ~Aug12, 2024	Apr. 10, 2025	Radiation (03CH06-KS)
SHF-EHF Horn	Com-power	AH-840	101093	18GHz~40GHz	Jan. 06, 2024	Jul. 25, 2024 ~Aug12, 2024	Jan. 05, 2025	Radiation (03CH06-KS)
Amplifier	SONOMA	310N	372171	9KHz ~1GHZ	Jan. 02, 2024	Jul. 25, 2024 ~Aug12, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
Amplifier	EM	EM18G40GA	060728	18~40GHz	Jan. 02, 2024	Jul. 25, 2024 ~Aug12, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
high gain Amplifier	MITEQ	AMF-7D-00101800-30-10P	2082395	1Ghz-18Ghz	Jan. 02, 2024	Jul. 25, 2024 ~Aug12, 2024	Jan. 01, 2025	Radiation (03CH06-KS)
Amplifier	Keysight	83017A	MY53270319	500MHz~26.5GHz	Oct. 11, 2023	Jul. 25, 2024 ~Aug12, 2024	Oct. 10, 2024	Radiation (03CH06-KS)
AC Power Source	Chroma	61601	F104090004	N/A	NCR	Jul. 25, 2024 ~Aug12, 2024	NCR	Radiation (03CH06-KS)
Turn Table	ChamPro	EM 1000-T	060762-T	0~360 degree	NCR	Jul. 25, 2024 ~Aug12, 2024	NCR	Radiation (03CH06-KS)
Antenna Mast	ChamPro	EM 1000-A	060762-A	1 m~4 m	NCR	Jul. 25, 2024 ~Aug12, 2024	NCR	Radiation (03CH06-KS)
EMI Receiver	R&S	ESCI7	100768	9kHz~7GHz;	Apr 18, 2024	Jul. 21, 2024	Apr 17, 2025	Conduction (CO01-KS)
AC LISN (for auxiliary equipment)	MessTec	AN3016	060103	9kHz~30MHz	Oct. 11, 2023	Jul. 21, 2024	Oct. 10, 2024	Conduction (CO01-KS)
AC LISN	MessTec	AN3016	060105	9kHz~30MHz	Apr 18, 2024	Jul. 21, 2024	Apr 17, 2025	Conduction (CO01-KS)
AC Power Source	Chroma	61602	ABP000000811	AC 0V~300V, 45Hz~1000Hz	Oct. 11, 2023	Jul. 21, 2024	Oct. 10, 2024	Conduction (CO01-KS)

NCR: No Calibration Required

5 Measurement Uncertainty

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI 63.10-2013. All the measurement uncertainty value were shown with a coverage K=2 to indicate 95% level of confidence. The measurement data show herein meets or exceeds the CISPR measurement uncertainty values specified in CISPR 16-4-2 and can be compared directly to specified limit to determine compliance.

Uncertainty of Conducted Measurement

Conducted Spurious Emission & Bandedge	**±2.26 dB**
Occupied Channel Bandwidth	**±0.1%**
Conducted Power	**±0.46 dB**
Conducted Power Spectral Density	**±0.88 dB**
Frequency	**±0.4 Hz**

Uncertainty of AC Conducted Emission Measurement (0.15 MHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.84dB**

Uncertainty of Radiated Emission Measurement (9 KHz ~ 30 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.30dB**

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**6.06dB**

Uncertainty of Radiated Emission Measurement (1 GHz ~ 18 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.18dB**

Uncertainty of Radiated Emission Measurement (18 GHz ~ 40 GHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.38dB**

---------- THE END ----------

Appendix A. Conducted Test Results

Ambient Condition: 25 ℃, 45 %RH	
Test Date: 2024.7.19~2024.8.24	**Test Engineer:** Jiang Jun

<Class 1>:

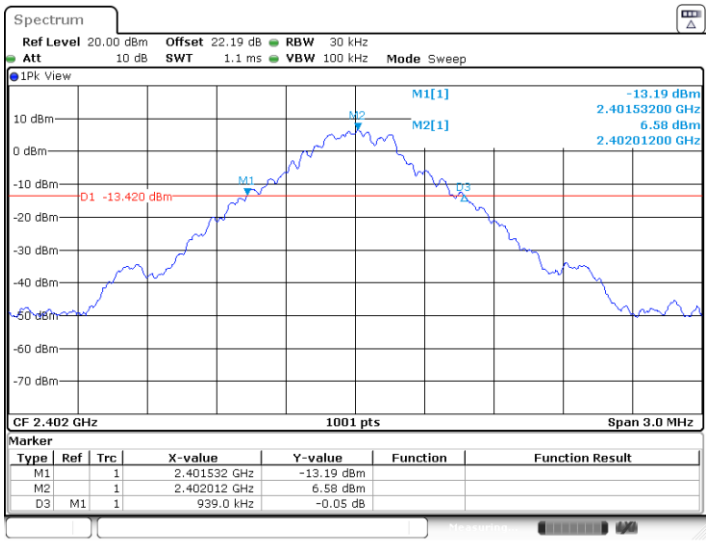
20dB Emission Bandwidth

Test Result

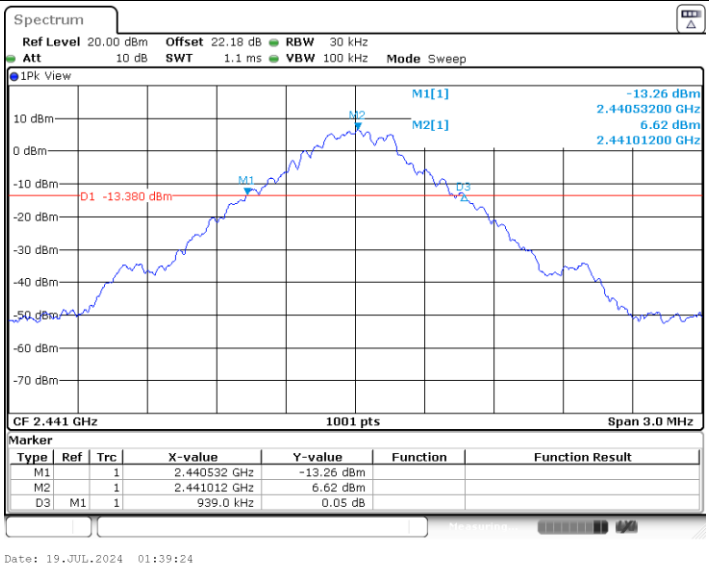
TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]
DH5	Ant7	2402	0.94	2401.53	2402.47
		2441	0.94	2440.53	2441.47
		2480	0.98	2479.50	2480.48
2DH1	Ant7	2402	1.25	2401.37	2402.62
		2441	1.25	2440.37	2441.62
		2480	1.27	2479.34	2480.61
3DH1	Ant7	2402	1.24	2401.38	2402.62
		2441	1.25	2440.38	2441.62
		2480	1.24	2479.38	2480.62

Test Graphs

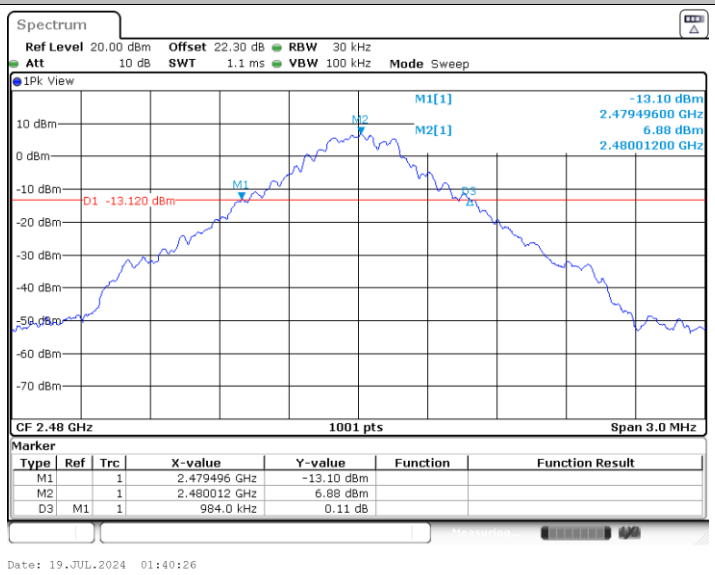
DH5_2402



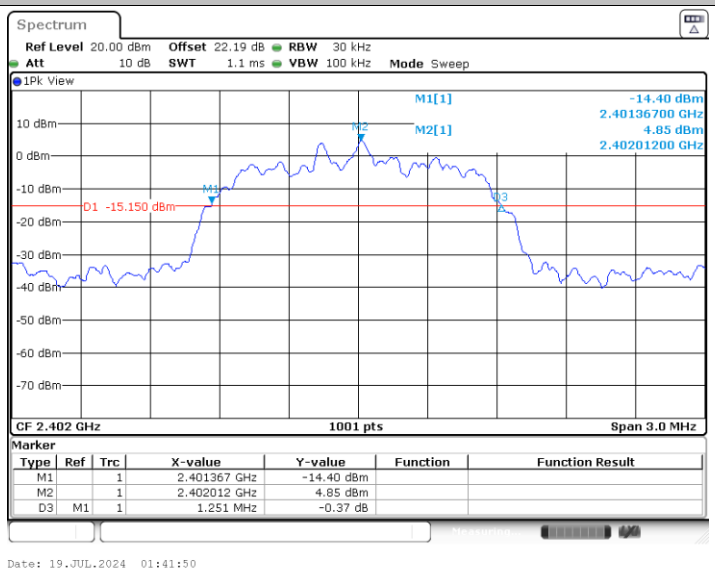
DH5_2441



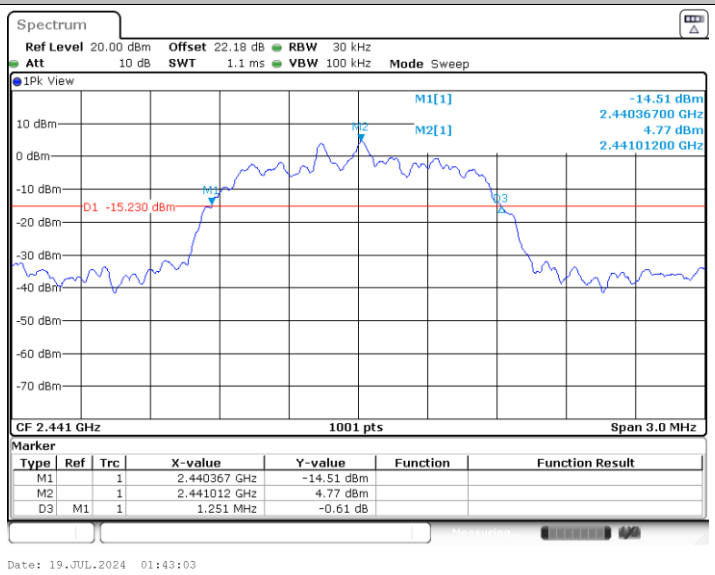
DH5_2480



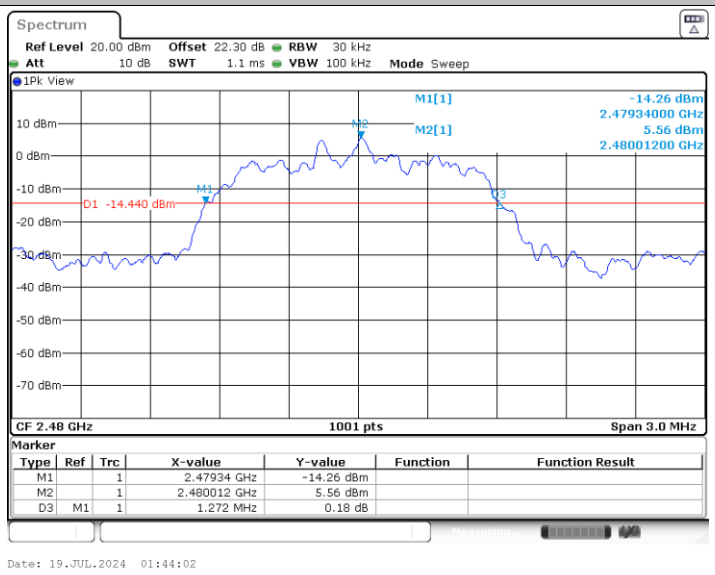
2DH1_2402



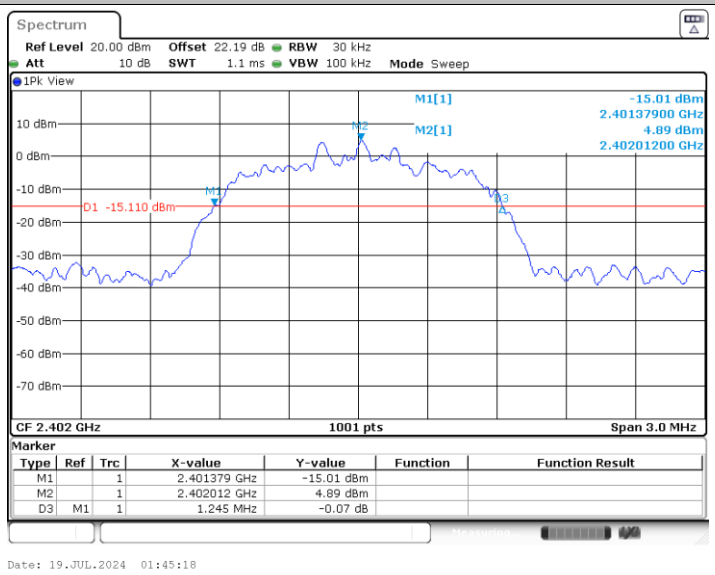
2DH1_2441



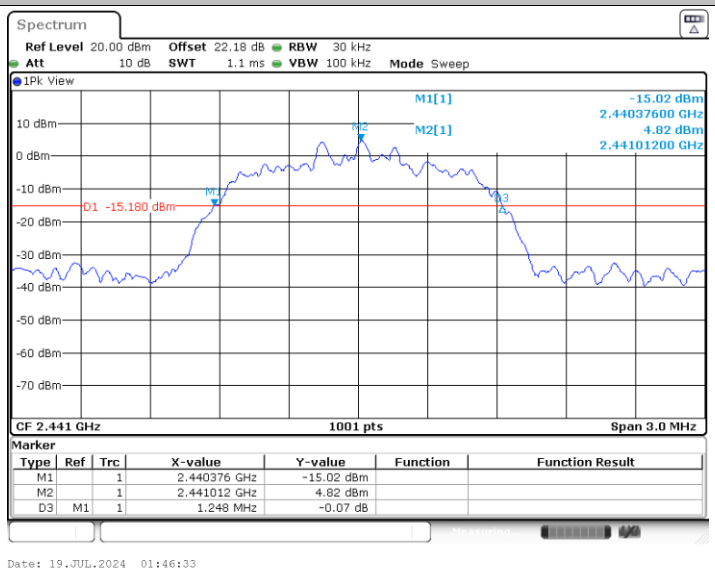
2DH1_2480



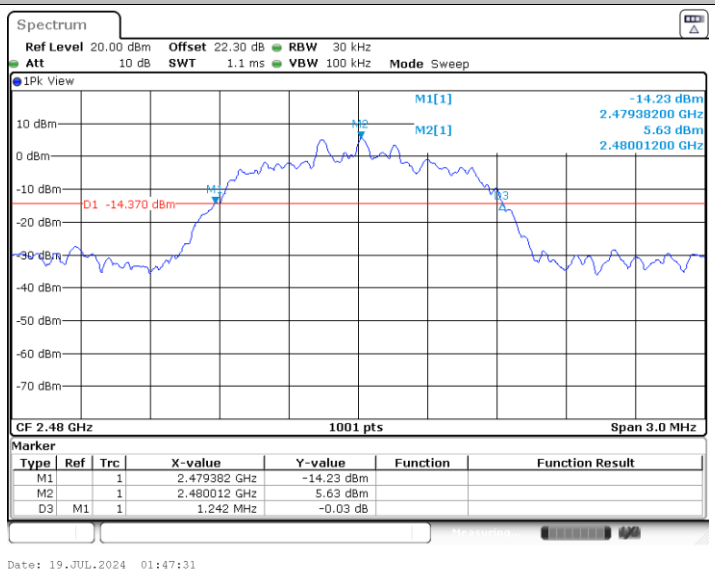
3DH1_2402



3DH1_2441



3DH1_2480


Spectrum
Ref Level 20.00 dBm Offset 22.30 dB RBW 30 kHz
Att 10 dB SWT 1.1 ms VBW 100 kHz Mode Sweep
1Pk View
M1[1] -14.23 dBm
2.47938200 GHz
M2[1] 5.63 dBm
2.48001200 GHz
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
D1 -14.370 dBm
CF 2.48 GHz
1001 pts
Span 3.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.479382 GHz -14.23 dBm
M2 1 2.480012 GHz 5.63 dBm
D3 M1 1 1.242 MHz -0.03 dB
Date: 19.JUL.2024 01:47:31

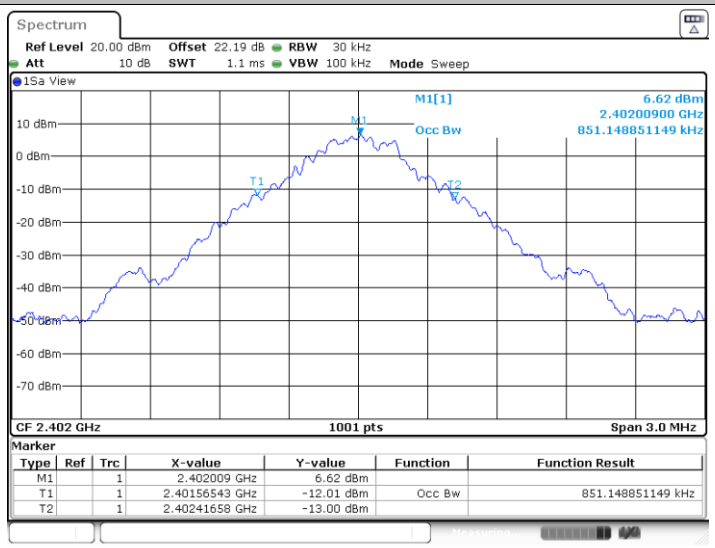
Occupied Channel Bandwidth

Test Result

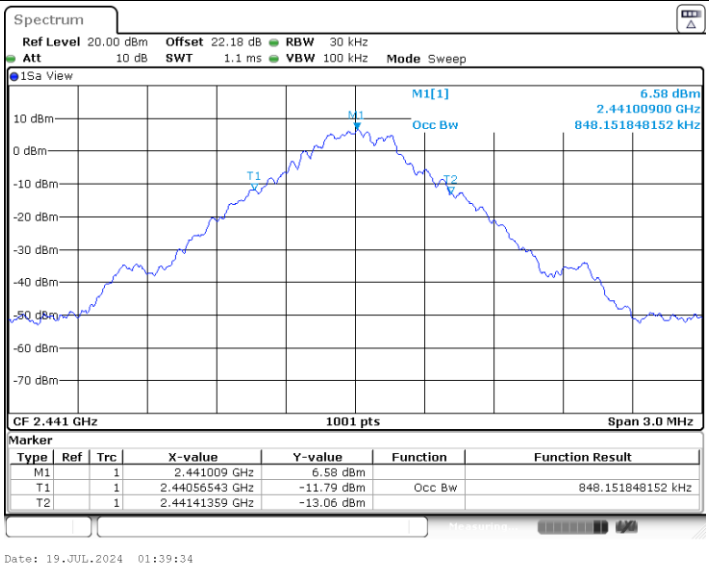
TestMode	Antenna	Freq(MHz)	OCB [MHz]	FL[MHz]	FH[MHz]
DH5	Ant7	2402	0.851	2401.5654	2402.4166
		2441	0.848	2440.5654	2441.4136
		2480	0.896	2479.5475	2480.4436
2DH1	Ant7	2402	1.172	2401.4006	2402.5724
		2441	1.172	2440.4006	2441.5724
		2480	1.181	2479.3946	2480.5754
3DH1	Ant7	2402	1.157	2401.4276	2402.5844
		2441	1.157	2440.4276	2441.5844
		2480	1.163	2479.4246	2480.5874

Test Graphs

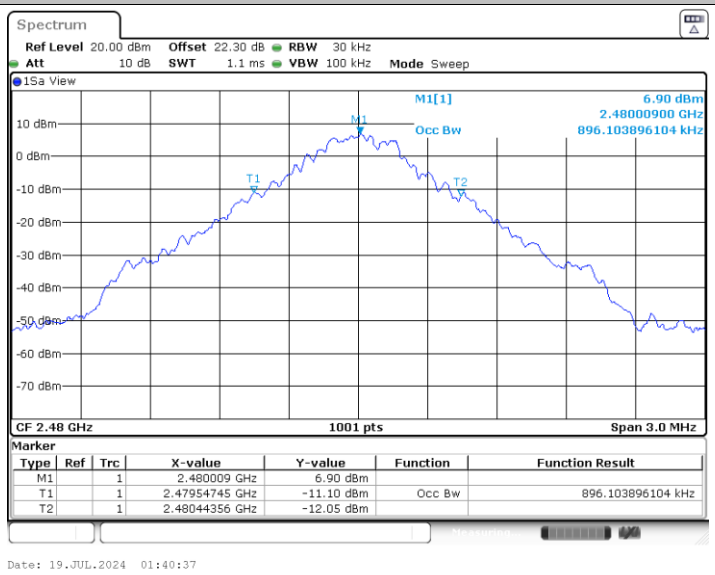
DH5_2402



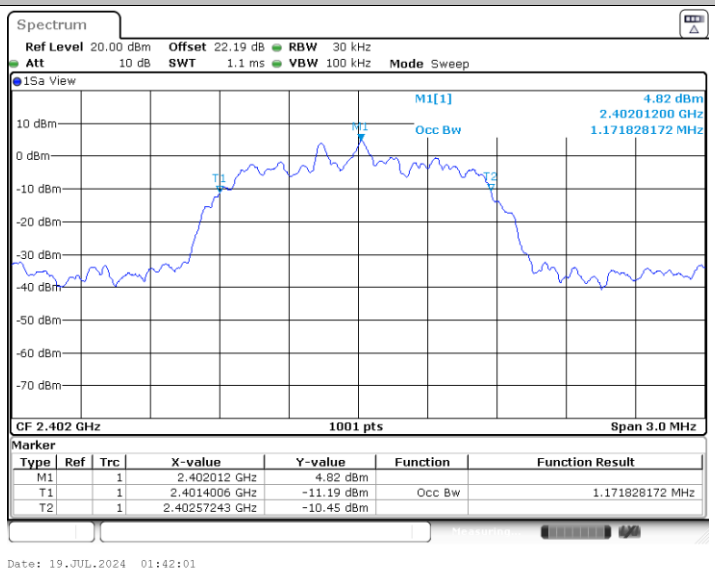
DH5_2441



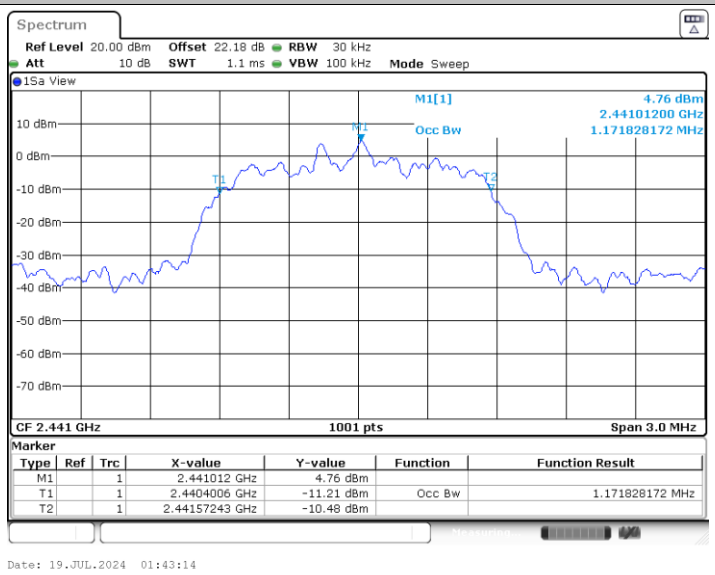
DH5_2480



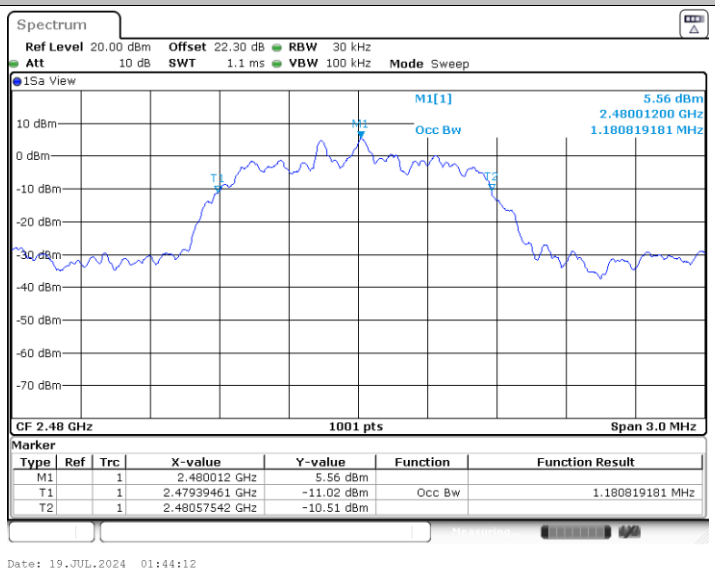
2DH1_2402



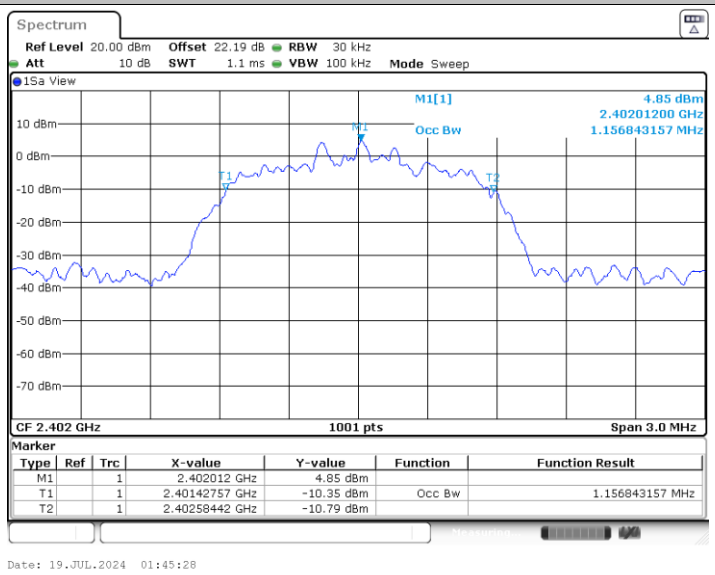
2DH1_2441



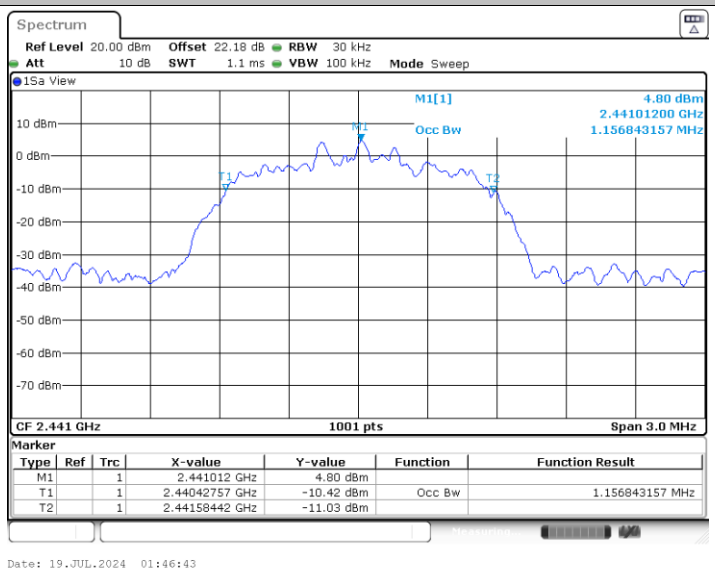
2DH1_2480



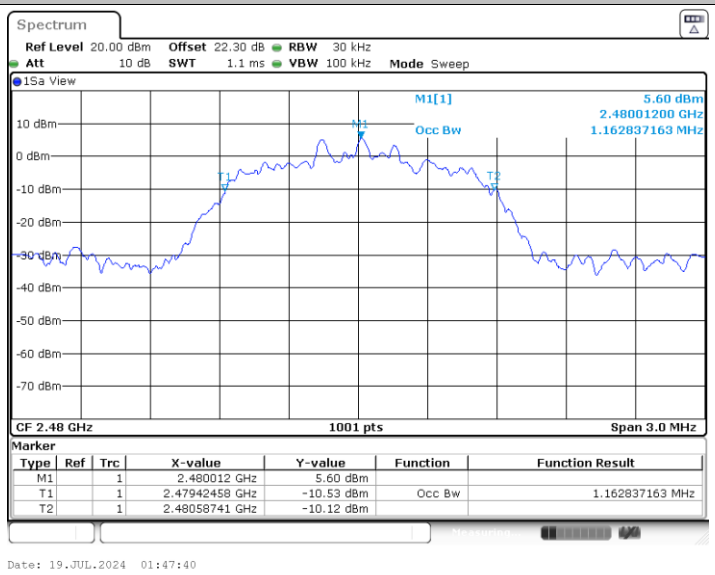
3DH1_2402



3DH1_2441



3DH1_2480


Spectrum
Ref Level 20.00 dBm Offset 22.30 dB RBW 30 kHz
Att 10 dB SWT 1.1 ms VBW 100 kHz Mode Sweep
1Sa View
M1[1] 5.60 dBm
2.48001200 GHz
1.162837163 MHz
Occ Bw
10 dBm
0 dBm
-10 dBm
-20 dBm
-30 dBm
-40 dBm
-50 dBm
-60 dBm
-70 dBm
CF 2.48 GHz
1001 pts
Span 3.0 MHz
Marker
Type Ref Trc X-value Y-value Function Function Result
M1 1 2.480012 GHz 5.60 dBm
T1 1 2.47942458 GHz -10.53 dBm Occ Bw 1.162837163 MHz
T2 1 2.48058741 GHz -10.12 dBm
Date: 19.JUL.2024 01:47:40

Maximum conducted output power

Test Result Peak

TestMode	Antenna	CH.	Peak Power (dBm)	Power Limit (dBm)	Pass/Fail
DH5	Ant7	0	9.27	20.97	Pass
		39	9.31	20.97	Pass
		78	9.57	20.97	Pass
2DH5	Ant7	0	8.61	20.97	Pass
		39	8.69	20.97	Pass
		78	9.14	20.97	Pass
3DH5	Ant7	0	8.86	20.97	Pass
		39	9.05	20.97	Pass
		78	9.39	20.97	Pass

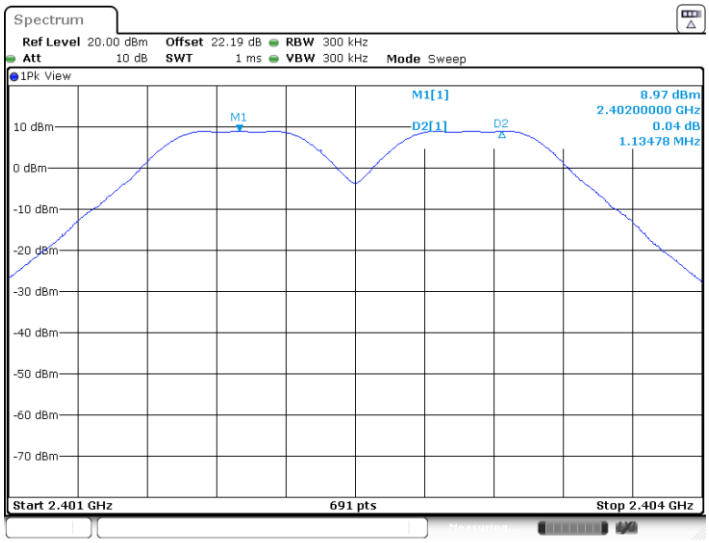
Carrier frequency separation

Test Result

TestMode	Antenna	Freq(MHz)	Result[MHz]	Limit[MHz]	Verdict
DH5	Ant7	2402	1.135	≥0.627	PASS
		2441	1.157	≥0.627	PASS
		2480	1.013	≥0.653	PASS
2DH1	Ant7	2402	0.983	≥0.833	PASS
		2441	0.996	≥0.833	PASS
		2480	0.852	≥0.847	PASS
3DH1	Ant7	2402	1.022	≥0.827	PASS
		2441	1.17	≥0.833	PASS
		2480	0.843	≥0.827	PASS

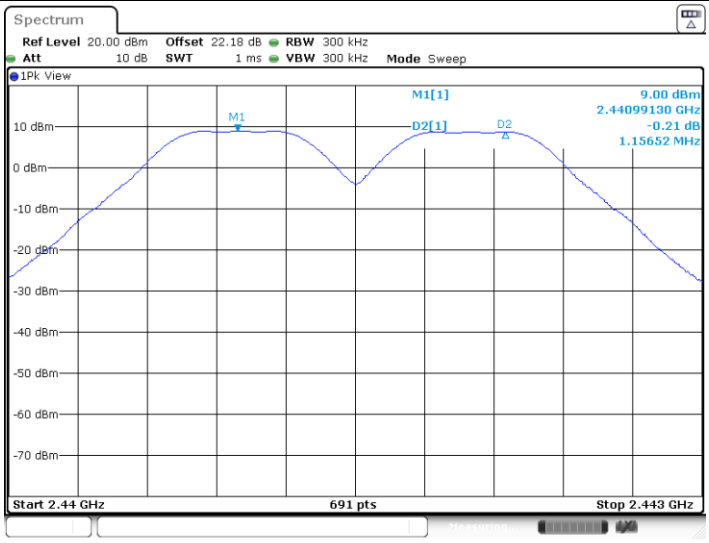
Test Graphs

DH5_Ant7_2402



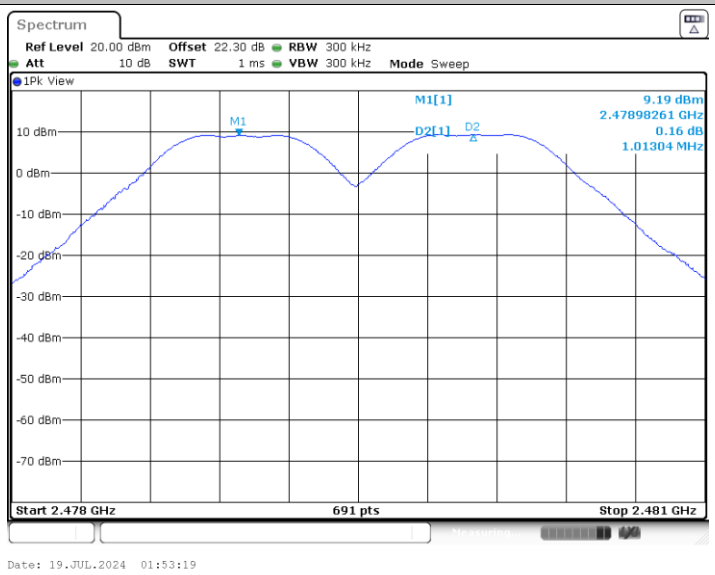
Date: 19.JUL.2024 01:52:07

DH5_Ant7_2441

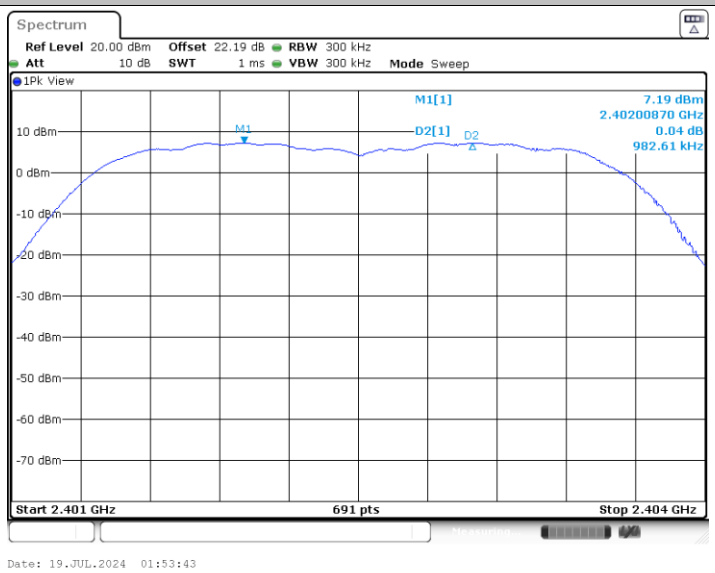


Date: 19.JUL.2024 01:53:01

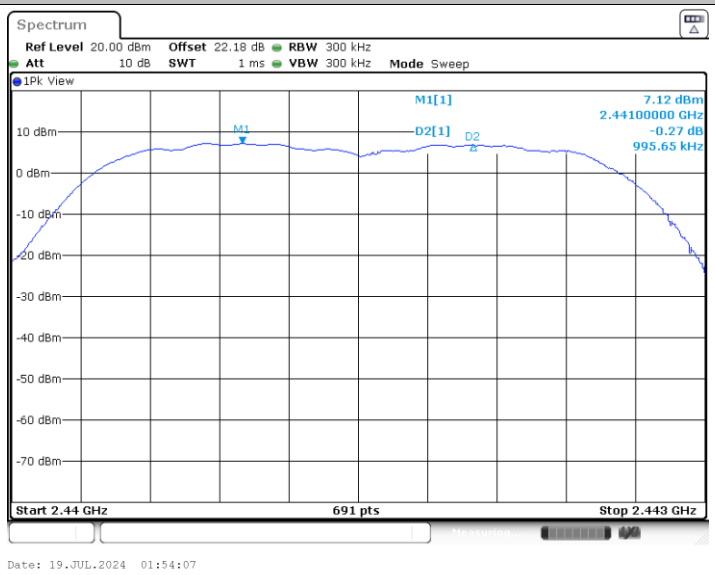
DH5_Ant7_2480



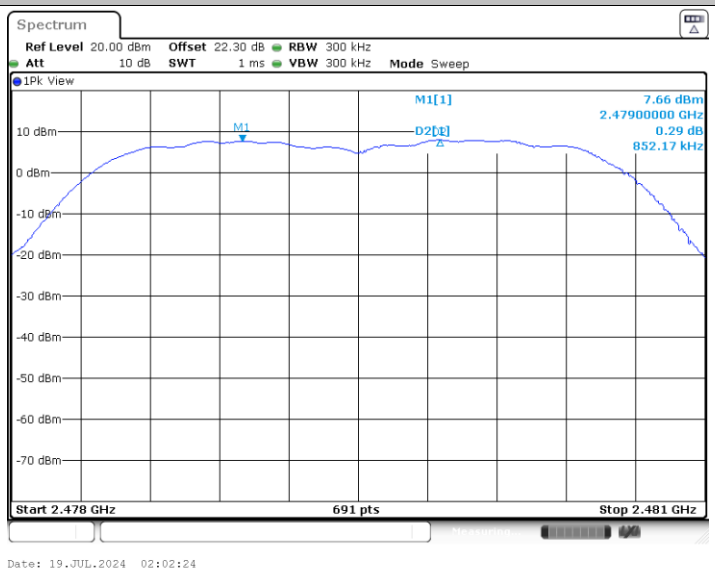
2DH1_Ant7_2402



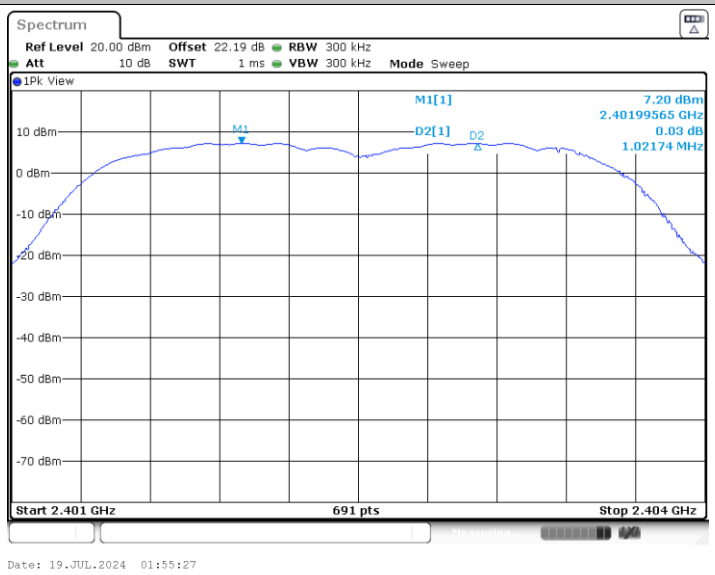
2DH1_Ant7_2441



2DH1_Ant7_2480

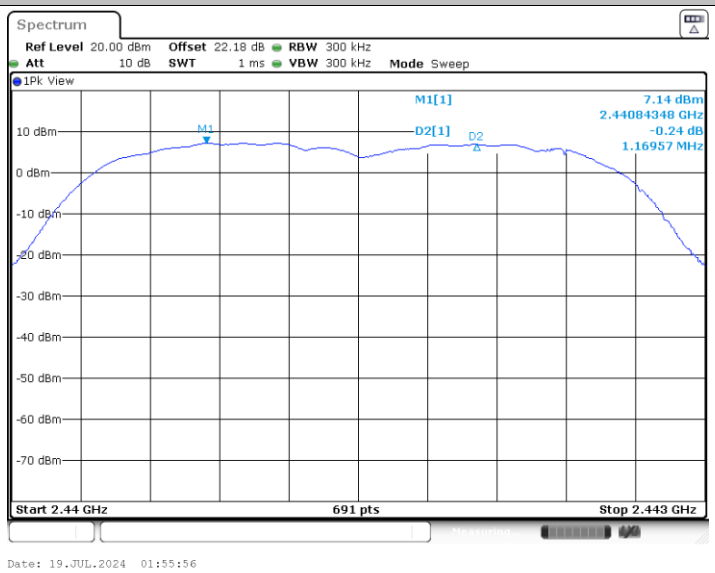


3DH1_Ant7_2402



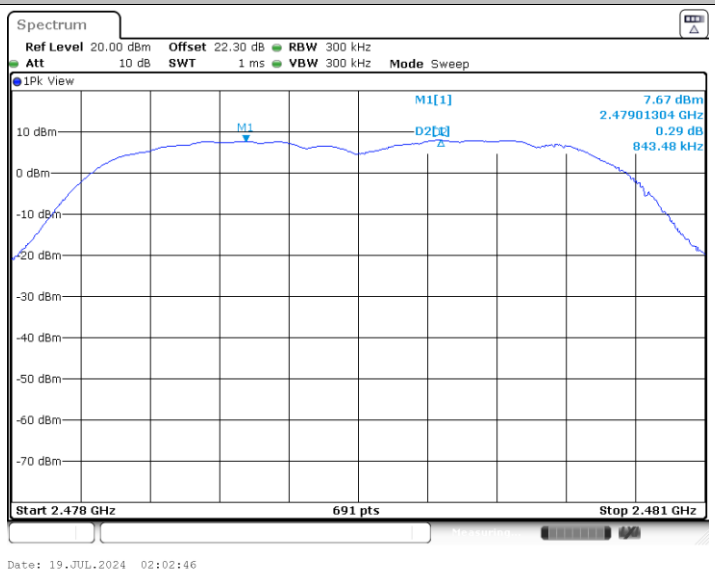
Date: 19.JUL.2024 01:55:27

3DH1_Ant7_2441



Date: 19.JUL.2024 01:55:56

3DH1_Ant7_2480



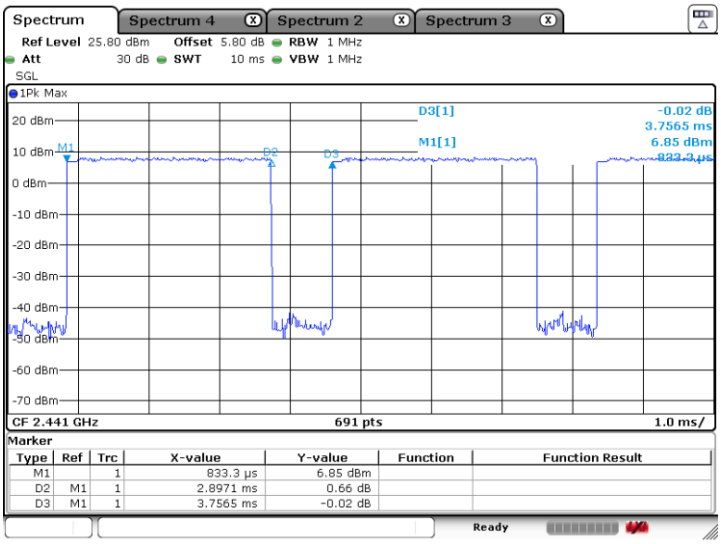
Time of occupancy

Test Result

TestMode	Antenna	Hopping Channel Number Rate	Hops Over Occupancy Time(hops)	Package Transfer Time (msec) (MHz)	Dwell Time (sec)	Limits (sec)	Pass/Fail
Normal	Ant7	79	106.67	2.8971	0.31	0.4	Pass
AFH	Ant7	20	53.33	2.8971	0.15	0.4	Pass

Test Graphs

3DH5_Ant7



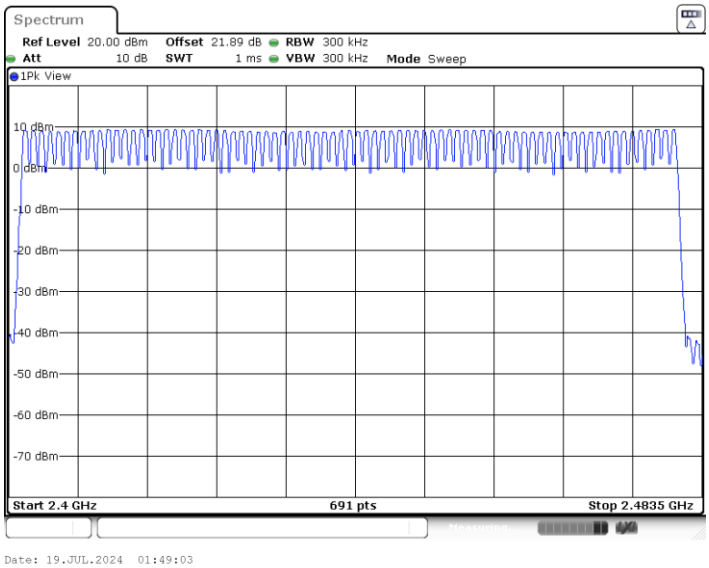
Number of hopping channels

Test Result

TestMode	Antenna	Freq(MHz)	Result[Num]	Limit[Num]	Verdict
DH5	Ant7	Hop	79	≥15	PASS

Test Graphs

DH5_Ant7_Hop



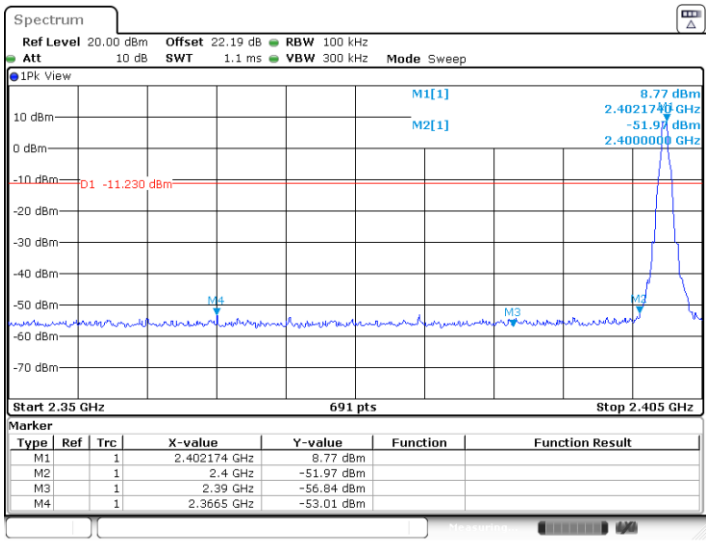
Band edge measurements

Test Result

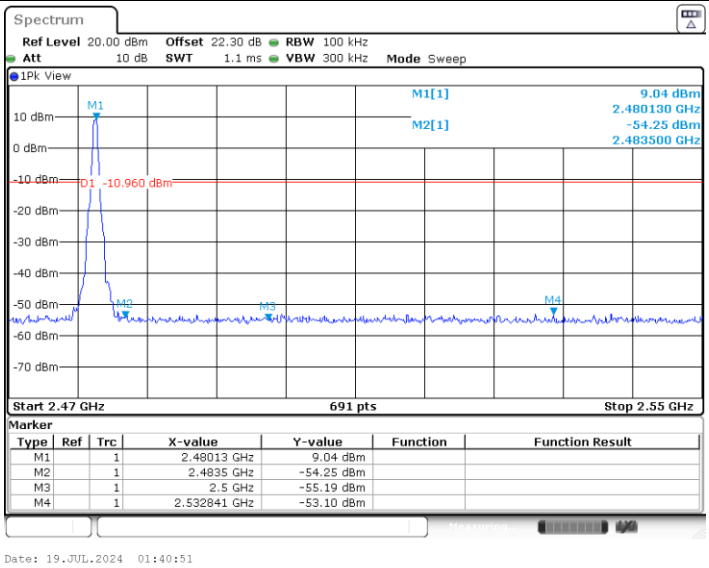
TestMode	Antenna	ChName	Freq(MHz)	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant7	Low	2402	8.77	-53.01	≤-11.23	PASS
		High	2480	9.04	-53.1	≤-10.96	PASS
		Low	Hop_2402	8.18	-41.78	≤-11.82	PASS
		High	Hop_2480	8.95	-42.76	≤-11.05	PASS
2DH1	Ant7	Low	2402	6.92	-50.03	≤-13.08	PASS
		High	2480	7.71	-52.96	≤-12.29	PASS
		Low	Hop_2402	6.47	-42.27	≤-13.53	PASS
		High	Hop_2480	7.32	-42.89	≤-12.68	PASS
3DH1	Ant7	Low	2402	6.96	-48.62	≤-13.04	PASS
		High	2480	7.75	-52.36	≤-12.25	PASS
		Low	Hop_2402	6.30	-41.25	≤-13.7	PASS
		High	Hop_2480	7.71	-42.78	≤-12.29	PASS

Test Graphs

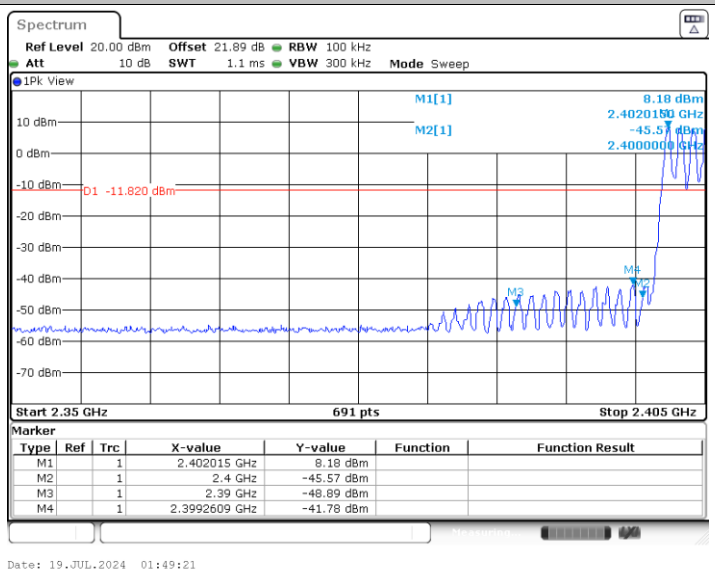
DH5_Ant7_Low_2402



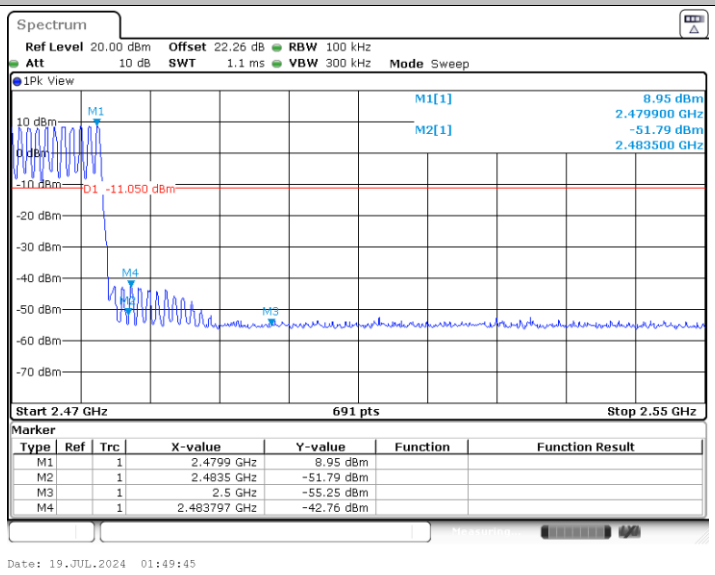
DH5_Ant7_High_2480



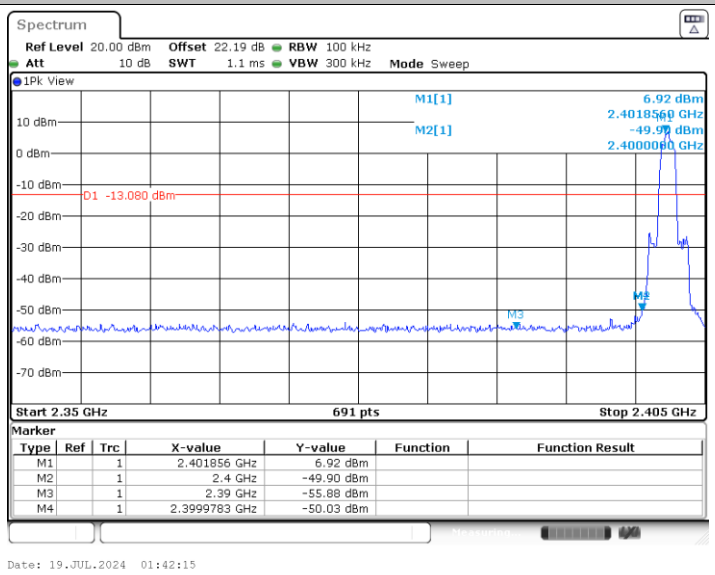
DH5_Ant7_Low_Hop_2402



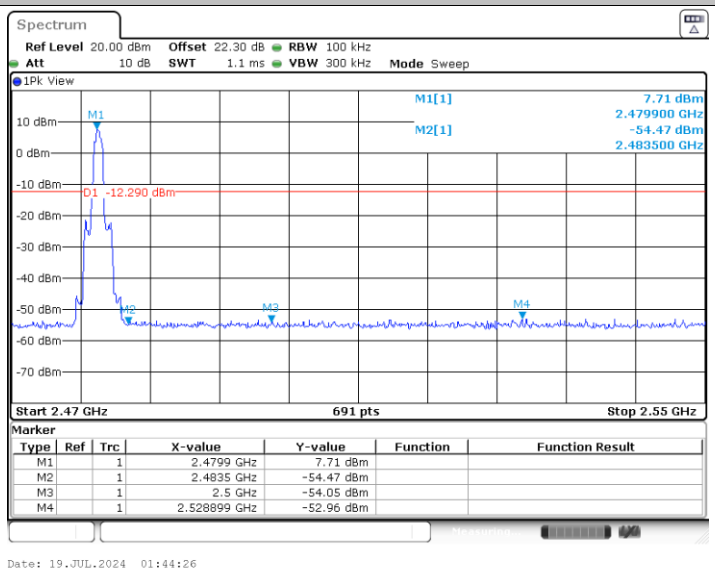
DH5_Ant7_High_Hop_2480



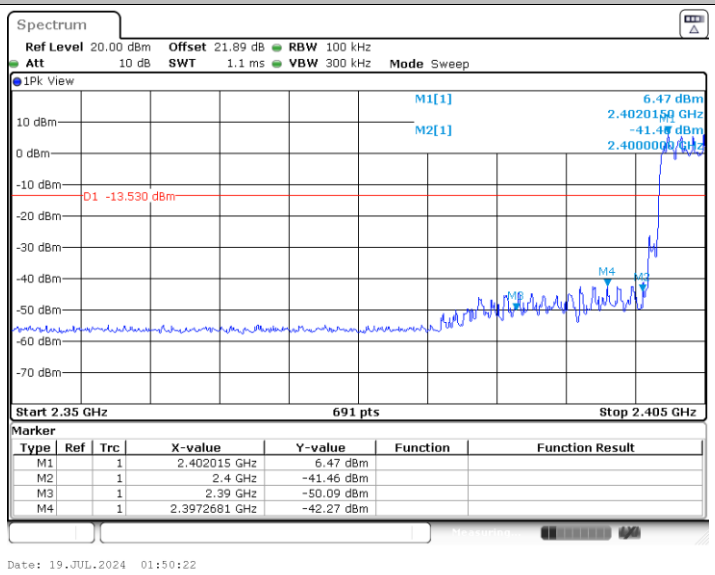
2DH1_Ant7_Low_2402



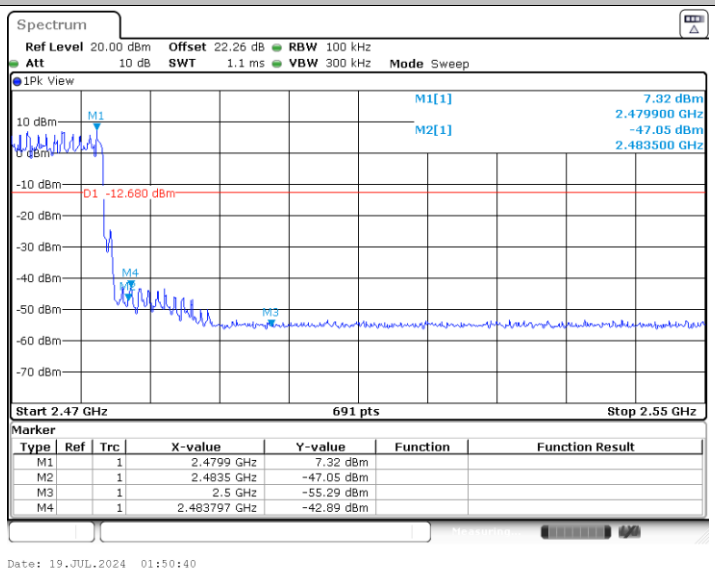
2DH1_Ant7_High_2480



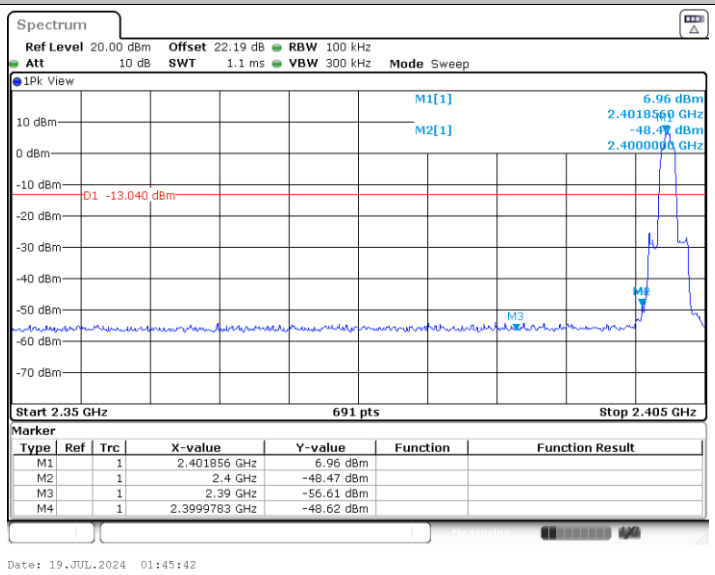
2DH1_Ant7_Low_Hop_2402



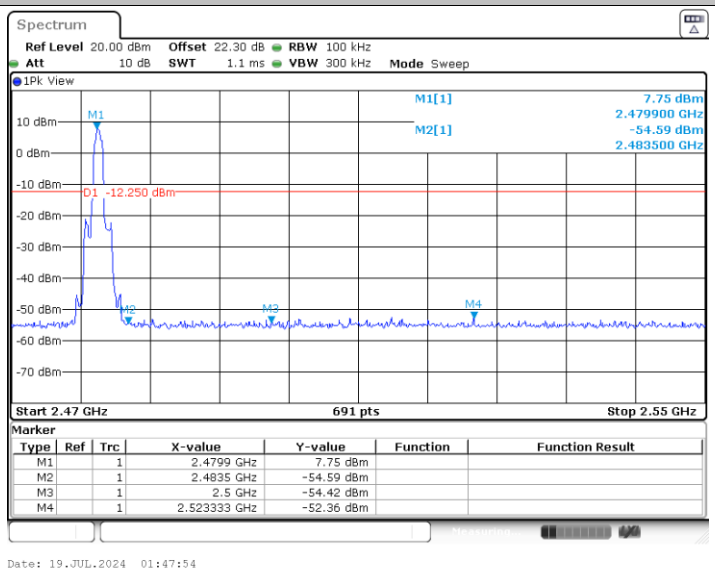
2DH1_Ant7_High_Hop_2480



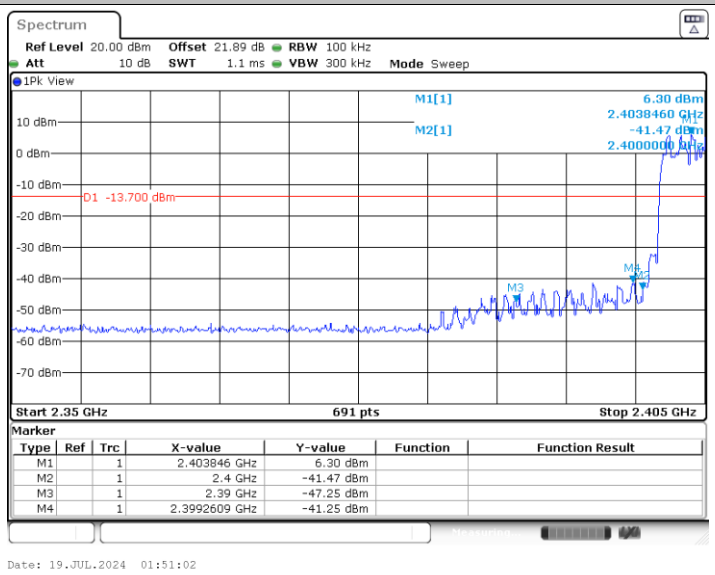
3DH1_Ant7_Low_2402



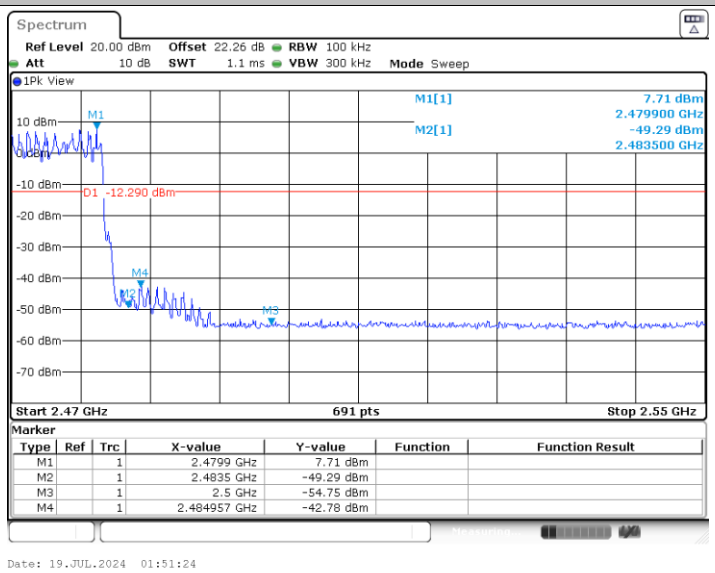
3DH1_Ant7_High_2480



3DH1_Ant7_Low_Hop_2402



3DH1_Ant7_High_Hop_2480



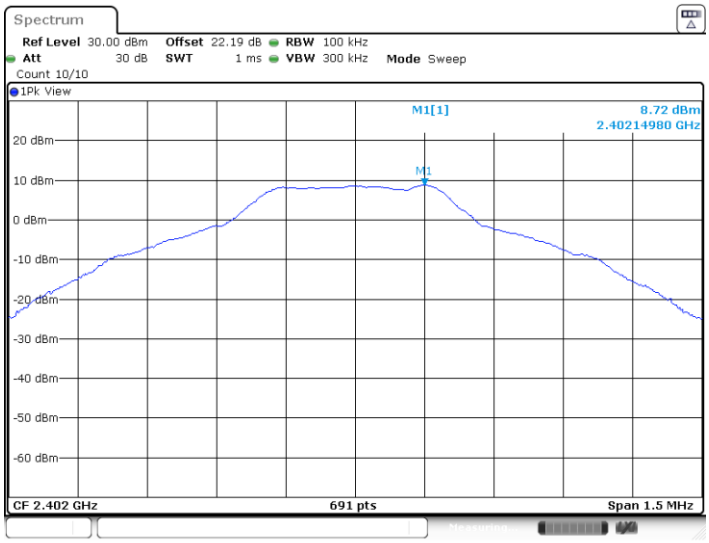
Conducted Spurious Emission

Test Result

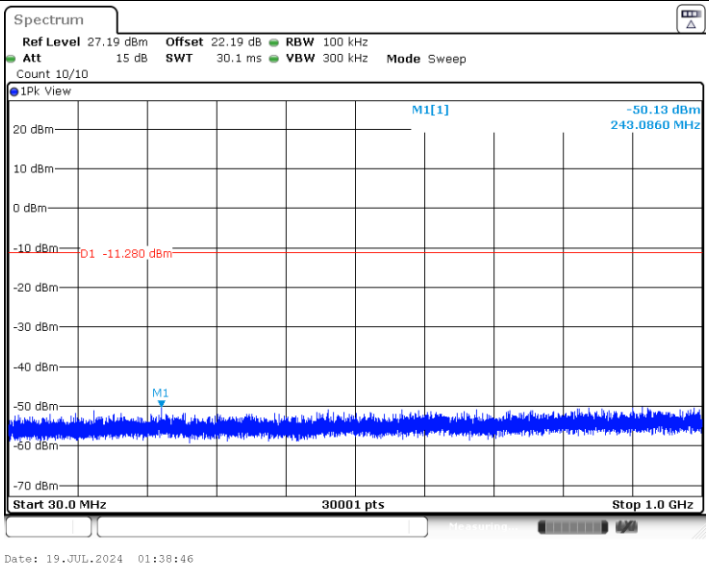
TestMode	Antenna	Freq(MHz)	FreqRange [MHz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
DH5	Ant7	2402	Reference	8.72	8.72	---	PASS
			30~1000	8.72	-50.13	≤-11.28	PASS
			1000~26500	8.72	-44.27	≤-11.28	PASS
		2441	Reference	8.70	8.70	---	PASS
			30~1000	8.70	-50.15	≤-11.3	PASS
			1000~26500	8.70	-44.33	≤-11.3	PASS
		2480	Reference	9.12	9.12	---	PASS
			30~1000	9.12	-49.42	≤-10.88	PASS
			1000~26500	9.12	-43.52	≤-10.88	PASS
2DH1	Ant7	2402	Reference	6.87	6.87	---	PASS
			30~1000	6.87	-49.6	≤-13.13	PASS
			1000~26500	6.87	-43.36	≤-13.13	PASS
		2441	Reference	6.88	6.88	---	PASS
			30~1000	6.88	-49.63	≤-13.12	PASS
			1000~26500	6.88	-43.48	≤-13.12	PASS
		2480	Reference	7.79	7.79	---	PASS
			30~1000	7.79	-49.75	≤-12.21	PASS
			1000~26500	7.79	-43.57	≤-12.21	PASS
3DH1	Ant7	2402	Reference	6.90	6.90	---	PASS
			30~1000	6.90	-49.84	≤-13.1	PASS
			1000~26500	6.90	-43.92	≤-13.1	PASS
		2441	Reference	6.92	6.92	---	PASS
			30~1000	6.92	-50.39	≤-13.08	PASS
			1000~26500	6.92	-43.98	≤-13.08	PASS
		2480	Reference	7.84	7.84	---	PASS
			30~1000	7.84	-49.7	≤-12.16	PASS
			1000~26500	7.84	-43.92	≤-12.16	PASS

Test Graphs

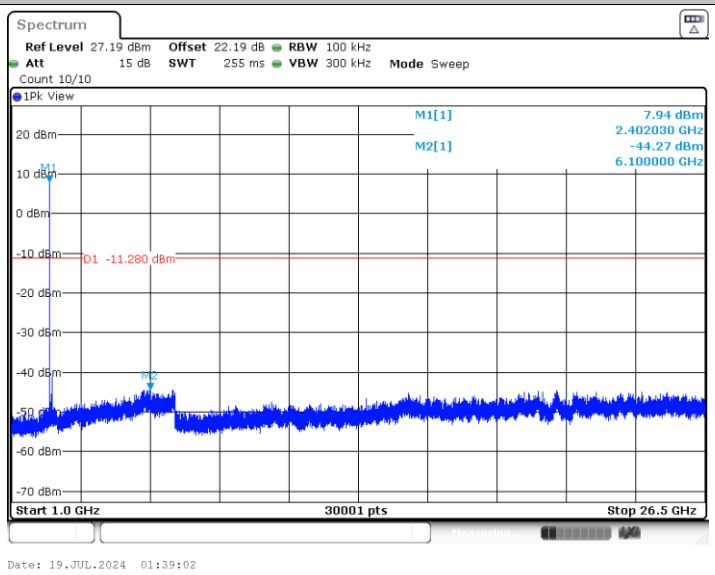
DH5_Ant7_2402_0~Reference



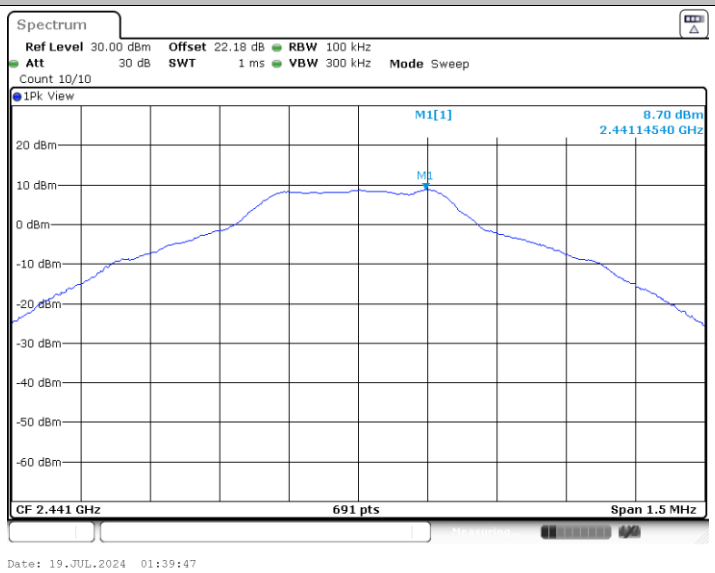
DH5_Ant7_2402_30~1000



DH5_Ant7_2402_1000~26500



DH5_Ant7_2441_0~Reference



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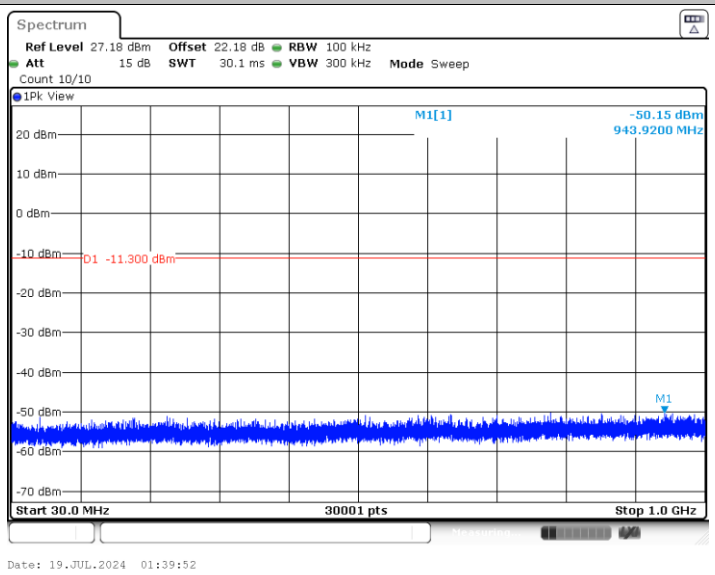

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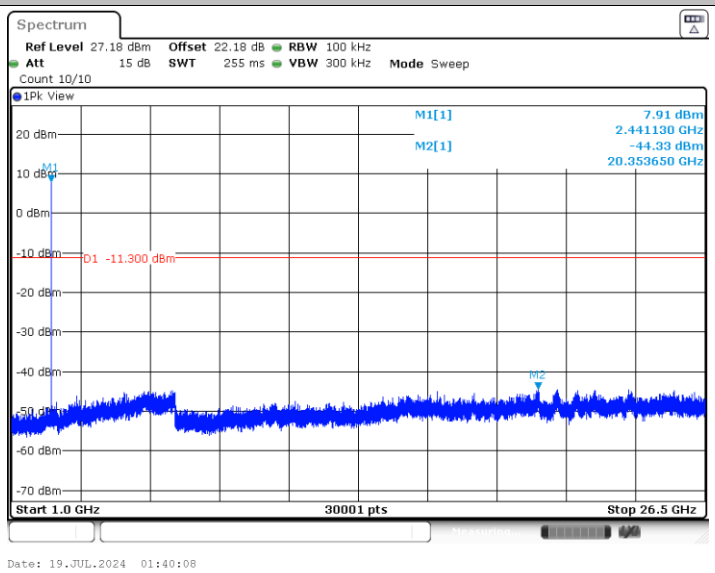

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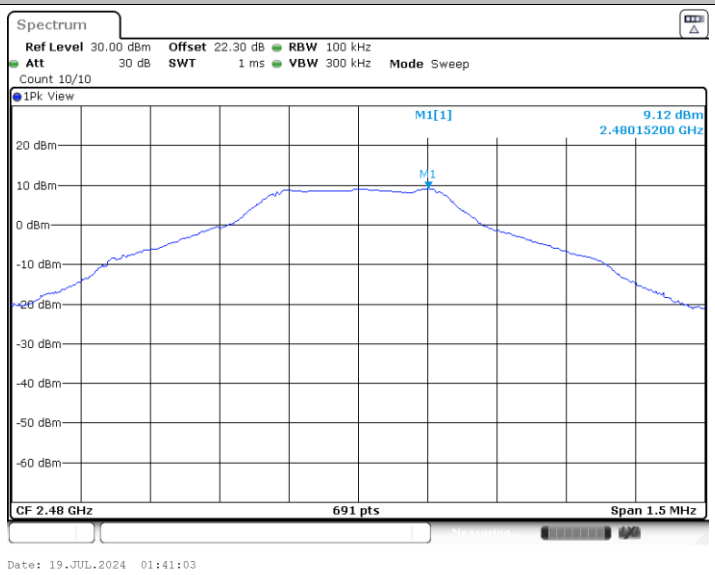

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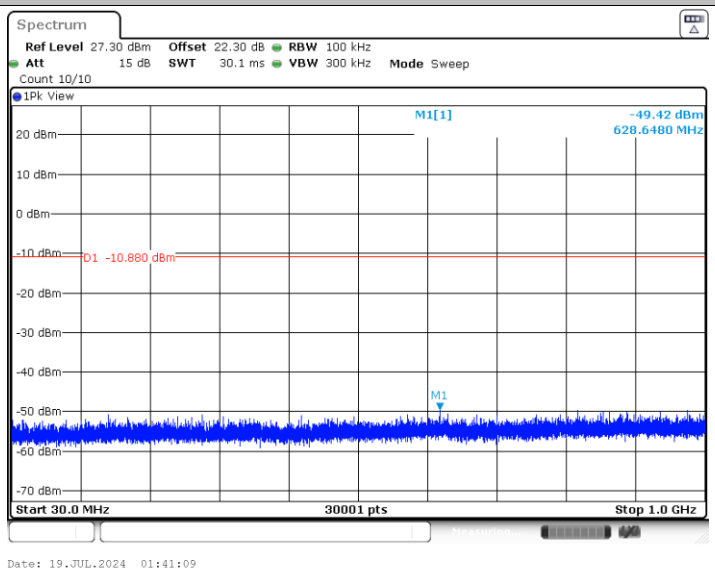

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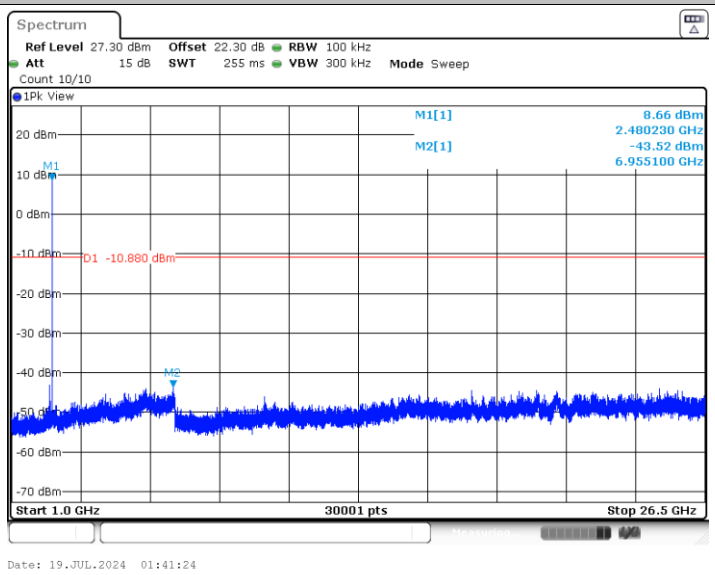

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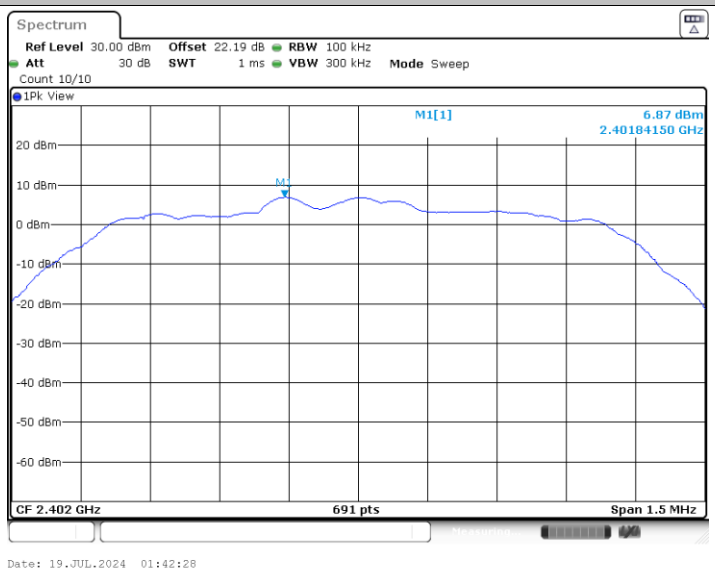

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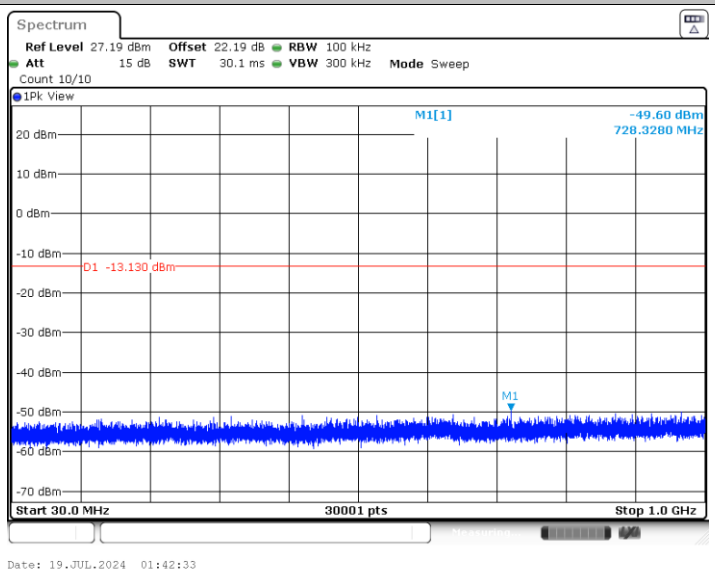

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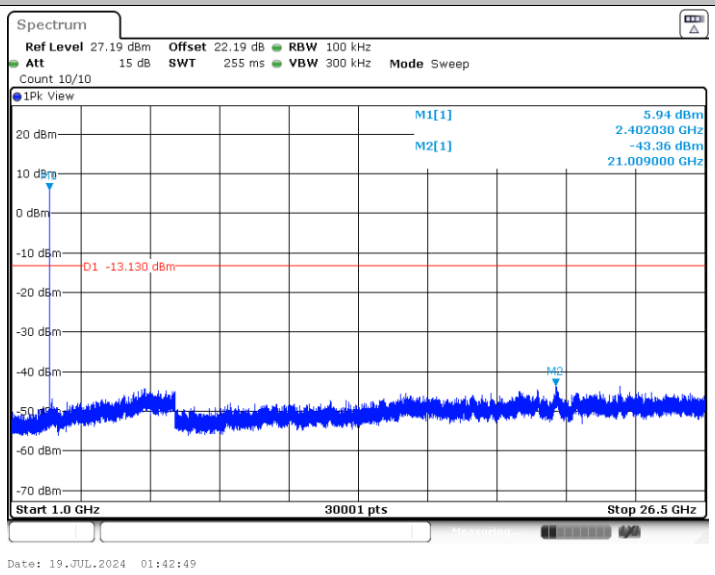

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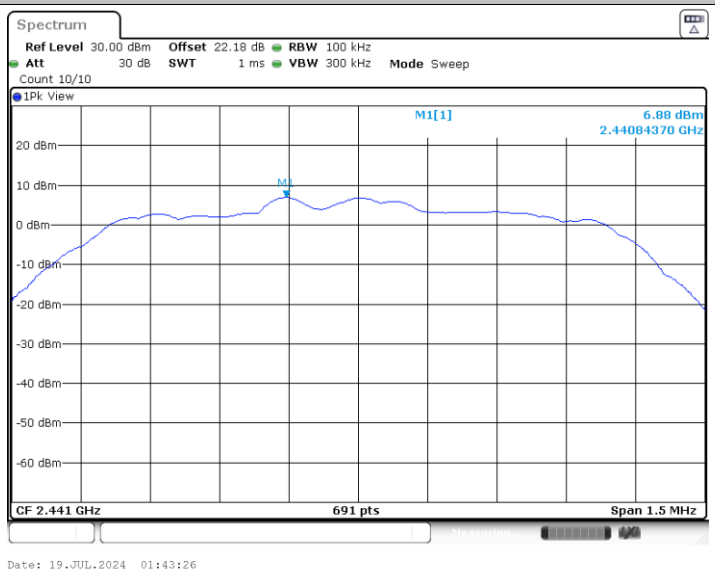

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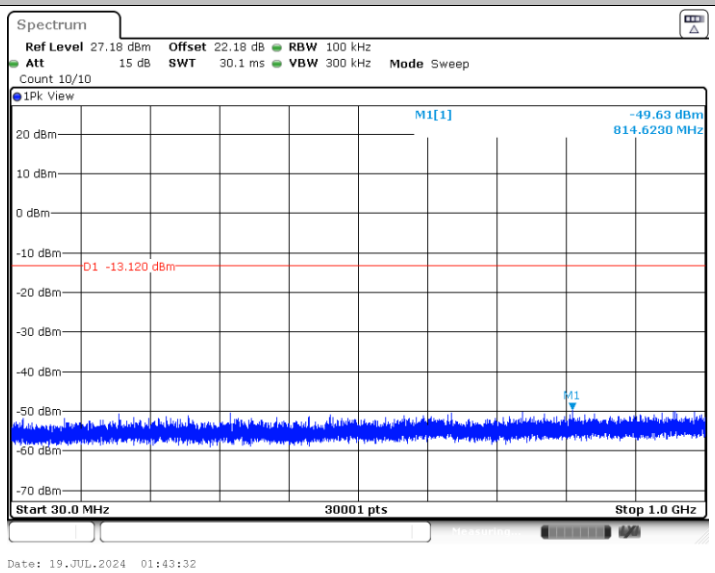

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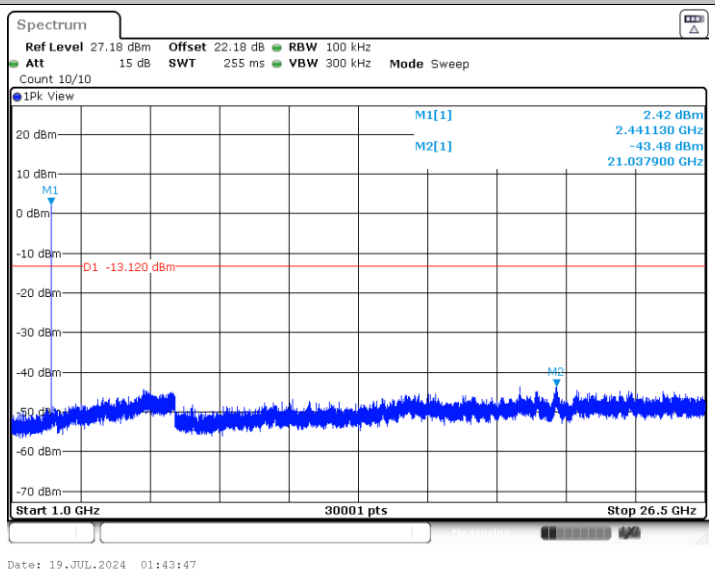

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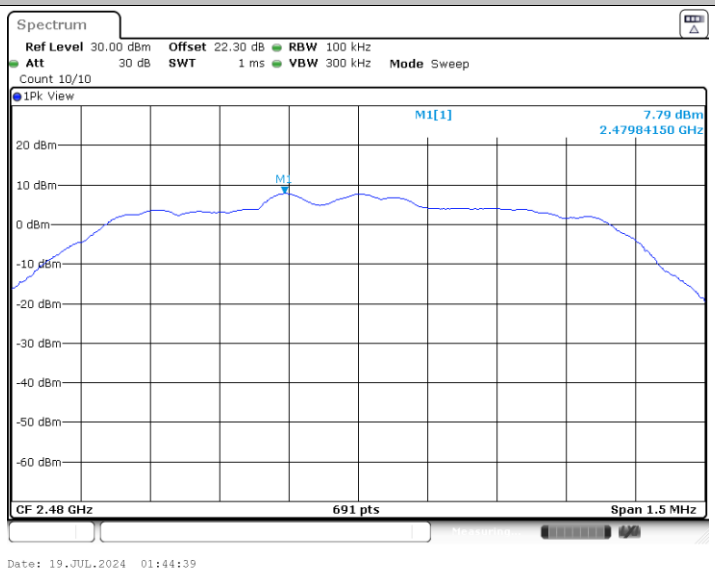

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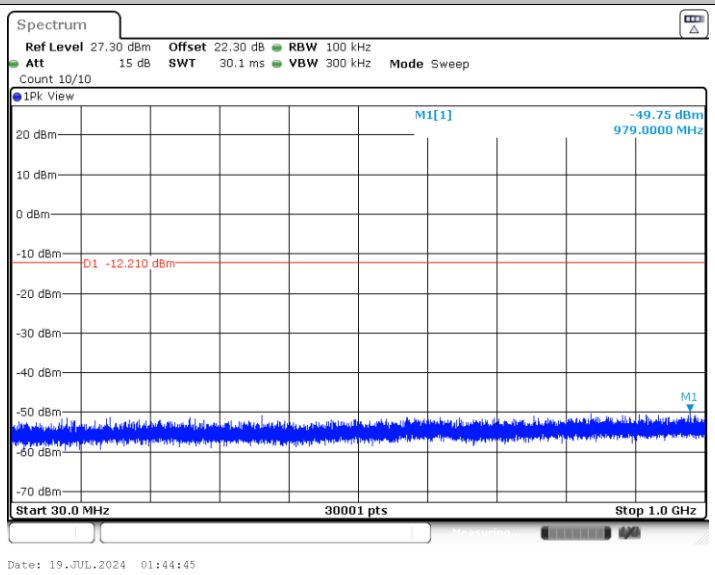

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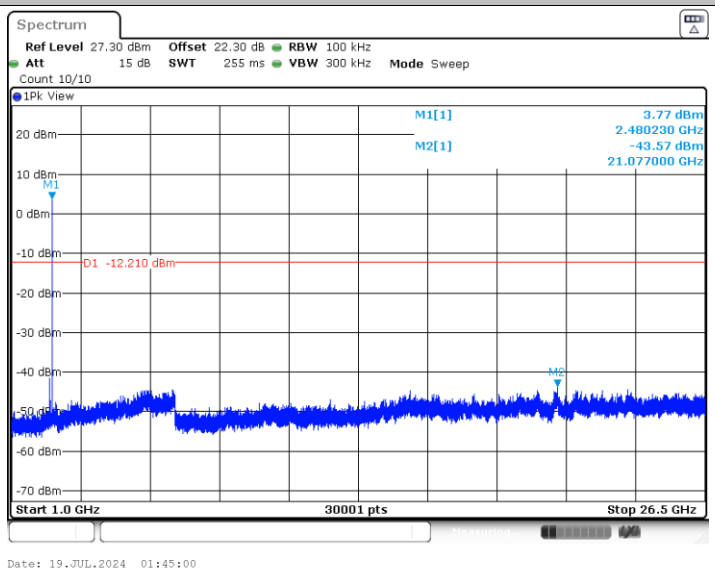

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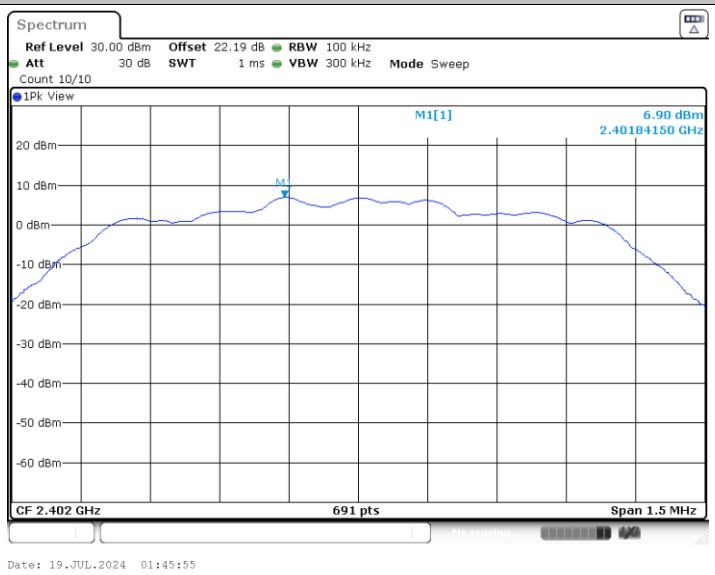

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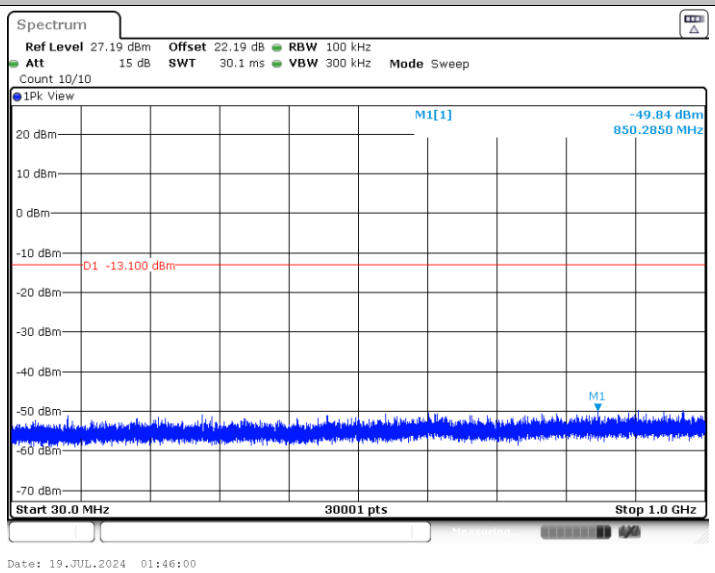

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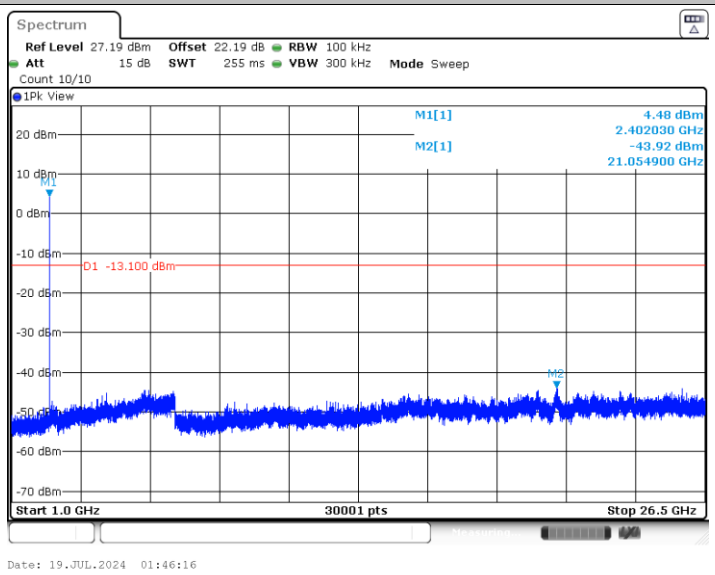

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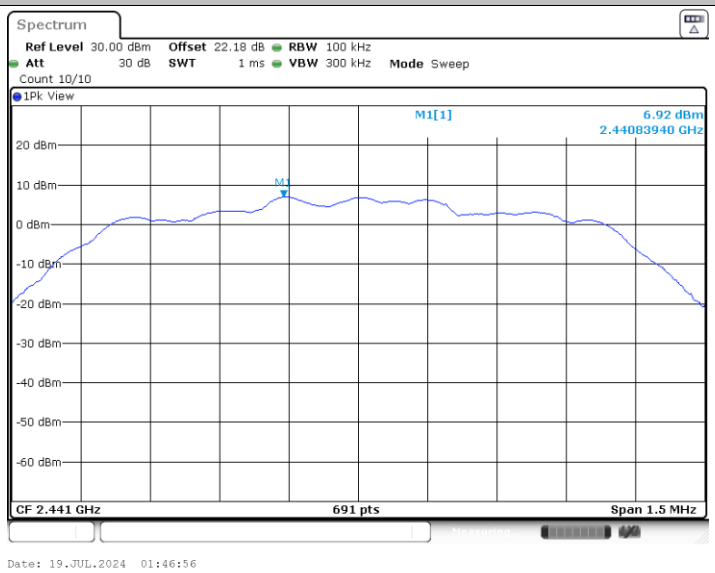

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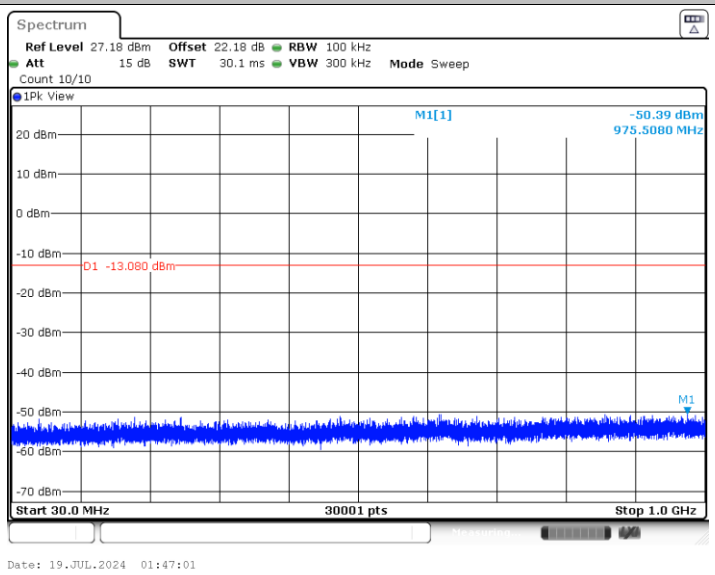

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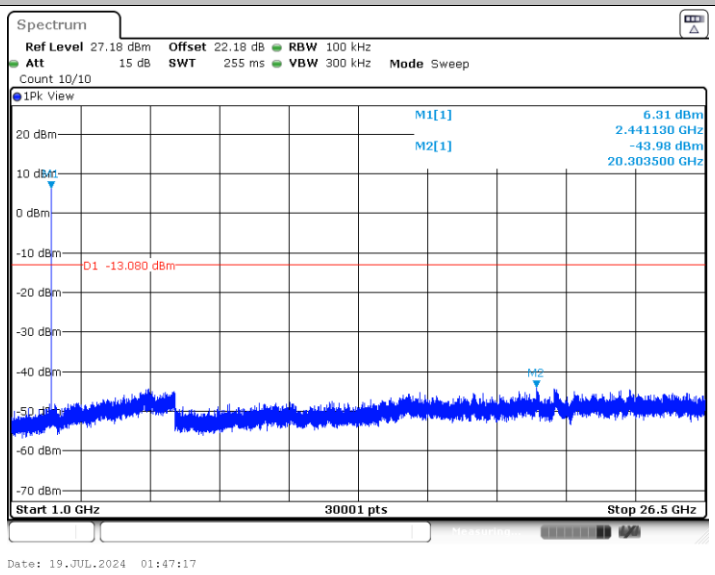

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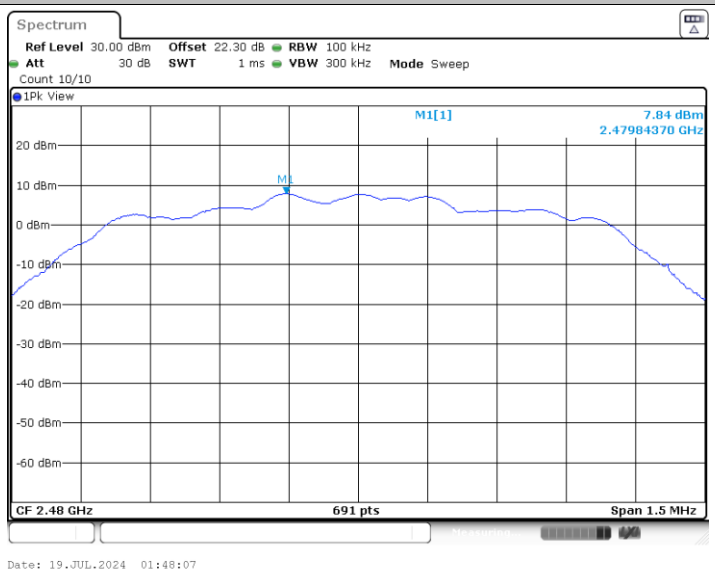

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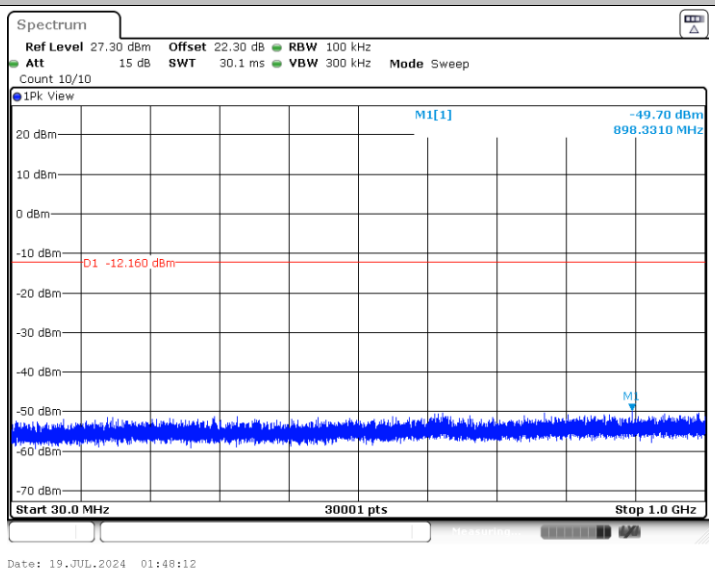

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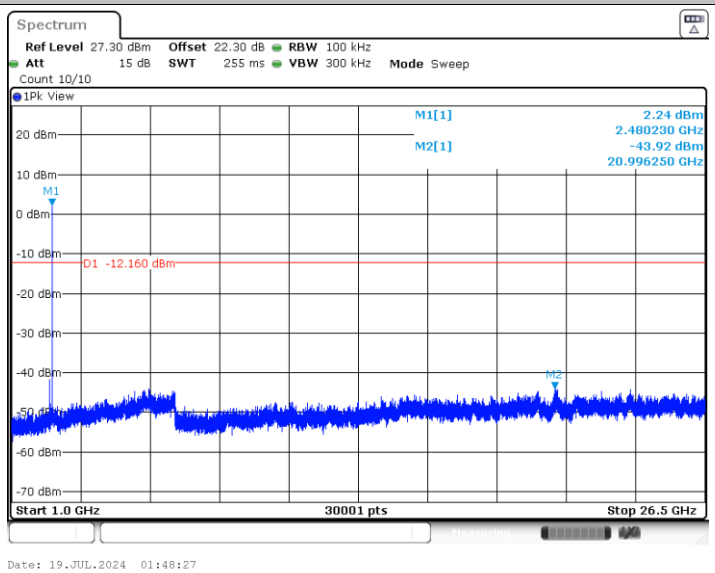


<Class 2>:

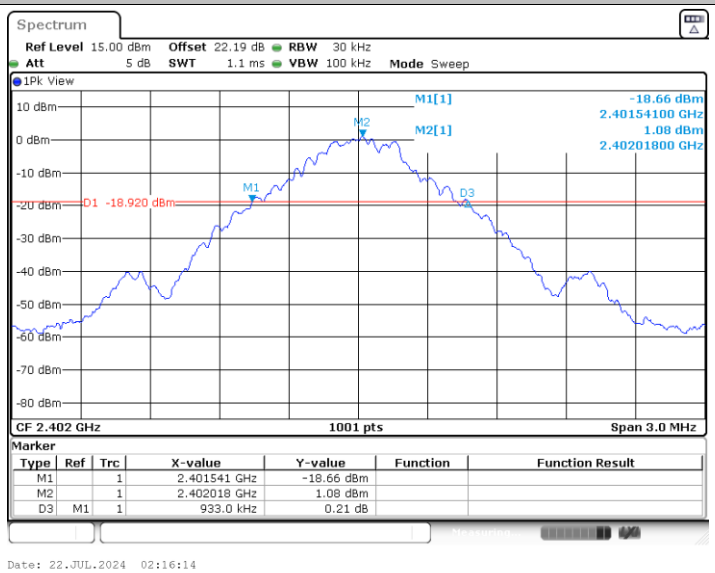
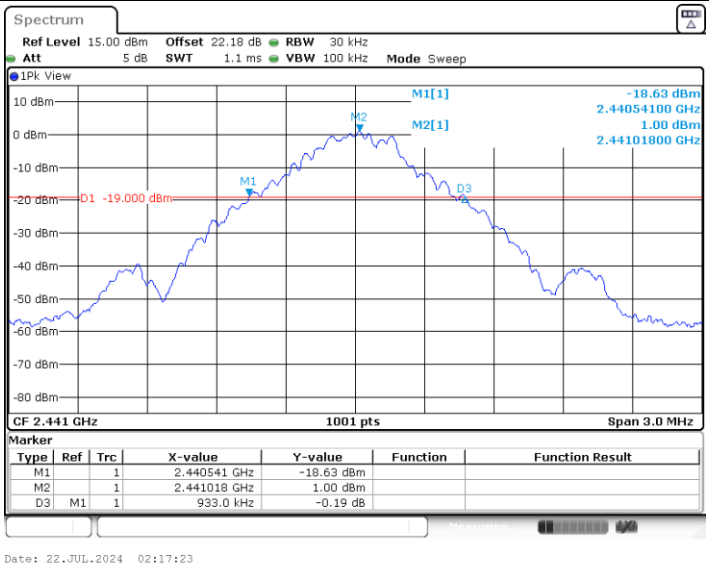
20dB Emission Bandwidth

Test Result

TestMode	Antenna	Freq(MHz)	20dB EBW[MHz]	FL[MHz]	FH[MHz]
DH5	Ant7	2402	0.93	2401.54	2402.47
		2441	0.93	2440.54	2441.47
		2480	0.93	2479.54	2480.47
2DH1	Ant7	2402	1.26	2401.37	2402.63
		2441	1.26	2440.37	2441.63
		2480	1.26	2479.37	2480.63
3DH1	Ant7	2402	1.25	2401.38	2402.63
		2441	1.25	2440.38	2441.63
		2480	1.25	2479.38	2480.62

Test Graphs

DH5_ Ant7_2402



DH5_ Ant7_2441