CERTIFICATION TEST REPORT

Report Number. : 4791083081-E5V2

Applicant	:	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	:	SC-53E, SCG27
FCC ID	:	A3LSMA556JPN
EUT Description	:	GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, and NFC
Test Standard(s)	:	FCC 47 CFR PART 15 SUBPART C

Date Of Issue:
2024-02-02

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IAS ACCREDITED Testing Laboratory TL-637

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	2024-01-29	Initial issue	Dexter(Hyunsik) Yun
V2	2024-02-02	Updated to address TCB's question	Dexter(Hyunsik) Yun

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME:	SAMSUNG ELECTRONICS CO., LTD.
EUT DESCRIPTION:	GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, and NFC.
MODEL NUMBER:	SC-53E, SCG27
SERIAL NUMBER:	7ab3a2c4292c7ece, 7ab3a2c5c72c7ece (CONDUCTED); 7ab3a2c4e12c7ece, 7ab3a2c5e82c7ece (RADIATED);
DATE TESTED:	2023-12-20 ~ 2024-02-02

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
47 CFR Part 15 Subpart C	Complies

UL KOREA LTD. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL KOREA LTD. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL KOREA LTD. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL KOREA LTD. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released For
UL KOREA LTD. By:

Seokhwan Hong
Suwon Lab Engineer
UL KOREA LTD.

Tested By:

Dexter(Hyunsik) Yun
Suwon Lab Engineer
UL KOREA LTD.

2. TEST METHODOLOGY

1. FCC 47 CFR Part 2.
2. FCC 47 CFR Part 15.
3. KDB 558074 D01 DTS Meas Guidance v05r02.
4. KDB 662911 D01 Multiple Transmitter Output v02r01
5. ANSI C63.10-2013.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea. Line conducted emissions are measured only at the 218 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

218 Maeyeong-ro
☒ Chamber 1(3m semi-anechoic chamber)
☒ Chamber 2(3m semi-anechoic chamber)
☒ Chamber 3(3m semi-anechoic chamber)
☐ Chamber 4(3m Full-anechoic chamber)
☐ Chamber 5(3m Full-anechoic chamber)

UL KOREA LTD. is accredited by IAS, Laboratory Code TL-637. The full scope of accreditation can be viewed at https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
28.9 dBuV/m = 36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB

AC Corrected Reading (dBuV) = Measured Voltage (dBuV) + Extension Cord Loss (dB) + Cable Loss (dB)
44.72 dBuV = 34.72 dBuV + 9.9 dB + 0.1 dB

4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	2.80 dB
Radiated Disturbance, 9 kHz to 30 MHz	1.69 dB
Radiated Disturbance, 30 MHz to 1 GHz	3.92 dB
Radiated Disturbance, 1 GHz to 18 GHz	5.06 dB
Radiated Disturbance, Above 18 GHz	6.02 dB

Uncertainty figures are valid to a confidence level of 95%.

4.4. DECISION RULE

Decision rule for statement(s) of conformity is based on Procedure 2, Clause 4.4.3 in IEC Guide 115:2021.

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5. EQUIPMENT UNDER TEST

5.1. EUT DESCRIPTION

The EUT is a GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, and NFC. This test report addresses the DTS (WLAN) operational mode.

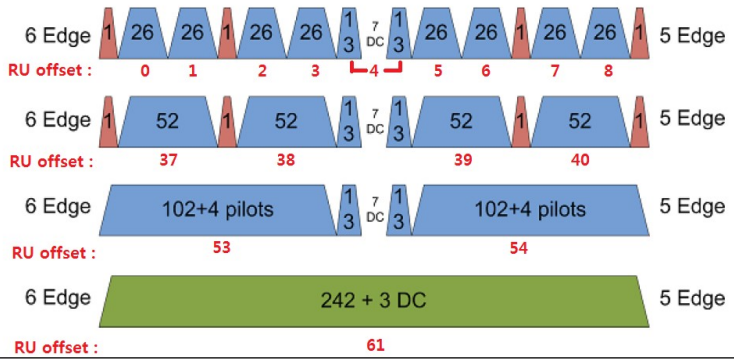
Representative model	Difference	Derivative model
		SCG27
SC-53E	Hardware	Same as SC-53E
	Software	Different UI

The model SC-53E was used for final testing and is representative of the test results in this report.

WiFi operating mode

Frequency rage	Mode	ANT 1	ANT 2
2.4GHz (2412 MHz ~ 2472 MHz)	802.11b MIMO	TX/RX	
	802.11g MIMO	TX/RX	
	802.11n(HT20) MIMO	TX/RX	
	802.11ax(HE20) MIMO	TX/RX	

802.11ax RU allocations



HE20

Test RU offset for tones

Mode	Tones number in RU	RU offset
HE20	26T	0
		4
		8
	52T	37
		38
		40
	106T	53
		54
	242T / SU Note 1	61 / -

Note. Full RU(Resource Unit) 242T mode and SU(Single Unit) mode have no difference in physical waveform. This report has been reported the SU mode with highest output power in MIMO.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum total conducted average output power as follows:

Frequency Range [MHz]	Mode	Output Power [dBm]		Output Power [mW]	
		ANT1	ANT2	ANT1	ANT2
2412 - 2472	802.11b MIMO	20.22		105.20	
	802.11g MIMO	18.60		72.44	
	802.11n(HT20) MIMO	18.37		68.71	
	802.11ax(HE20) MIMO	18.31		67.76	

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section.

The internal antenna was Permanently attached.
Therefore, this E.U.T Complies with the requirement of §15.203.

Bands [MHz]	ANT 1 [dBi]	ANT 2 [dBi]	Correlated Directional Gain [dBi]
2 412 ~ 2 472	-6.01	-7.31	-3.63

Directional gain for the MIMO operations is determined using KDB 662911 D01 Multiple Transmitter Output section F (2)(d)(1) for *Unequal antenna gains, with equal transmit powers*. The gain is calculated using the formula for correlated transmissions across the two transmit antennas. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}$] dBi.

Sample calculation for this device with $N_{ANT} = 2$

Directional gain = 10 log[$(10^{0.40/20} + 10^{0.30/20})^2 / 2$] = 3.36 dBi

“BT/WIFI #1_2.4GHz, 5GHz (SUB4)” and “BT/WIFI #2_2.4GHz (SUB6)” as indicated in antenna specification are written as ANT1 and ANT2 in this report.

5.4. TESTED CHANNELS LIST

Ch.	Frequency [MHz]	11b		11g		11n(HT20)		11ax(HE20)	
		SISO	MIMO	SISO	MIMO	SISO	MIMO	SISO	MIMO
1	2 412		O		O		O		O
2	2 417						O		
6	2 437		O		O		O		O
9	2 452						O		O
10	2 457				O		O		O
11	2 462		O		O		O		O
12	2 467		O		O		O		O
13	2 472		O		O		O		O

Note. SISO mode test was performed only to check average power. Because MIMO mode target power is higher than SISO mode.

5.5. WORST-CASE CONFIGURATION AND MODE

Both SISO and MIMO have been investigated and confirmed MIMO was the worst case set for radiated band edge and spurious emission tests.

The fundamentals of the EUT were investigated in three orthogonal orientations X, Y and Z on 2TX MIMO mode. It was determined that X orientation was the worst-case orientation for 2TX MIMO mode.

Radiated and power line conducted tests were performed with EUT connected to AC power adapter as the worst-case configuration. Radiated harmonics spurious 1~18 GHz Low/Mid/High channels,18-26GHz were performed with the EUT set at the 2TX MIMO mode. Radiated emission below 1GHz and power line conducted emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario.

For 802.11ax mode, output power and PSD tests were investigated between all different tones and found that SU mode had the highest output power and RU 26T has the highest PSD readings which was documented in this report. And after some pre-tests, SU mode was determined as the worst case set for final conducted/radiated band edge tests with some spot-check performed at the lowest RU offset of the lowest frequency and the highest RU offset of the highest frequency.

For conducted/radiated spurious tests, 802.11ax SU mode has lower PSD results than 802.11ax RU 26T and therefore, 802.11ax RU 26T's highest power offset was set for full test.

In case of 6dB Bandwidth, it was tested at the RU allocation with lowest tones number, RU 26Tones as the worst-case scenario.

Based on the baseline scan, the worst-case data rates were:
802.11b mode: 1 Mbps 2TX
802.11g mode: 6 Mbps 2TX
802.11n HT20 mode: MCS0 2TX
802.11ax HE20 mode: MCS0 2TX

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5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Charger	SAMSUNG	EP-TA800	R37W61WENTASEA	N/A
Data Cable	SAMSUNG	EP-DN980	GH39-02117A	N/A

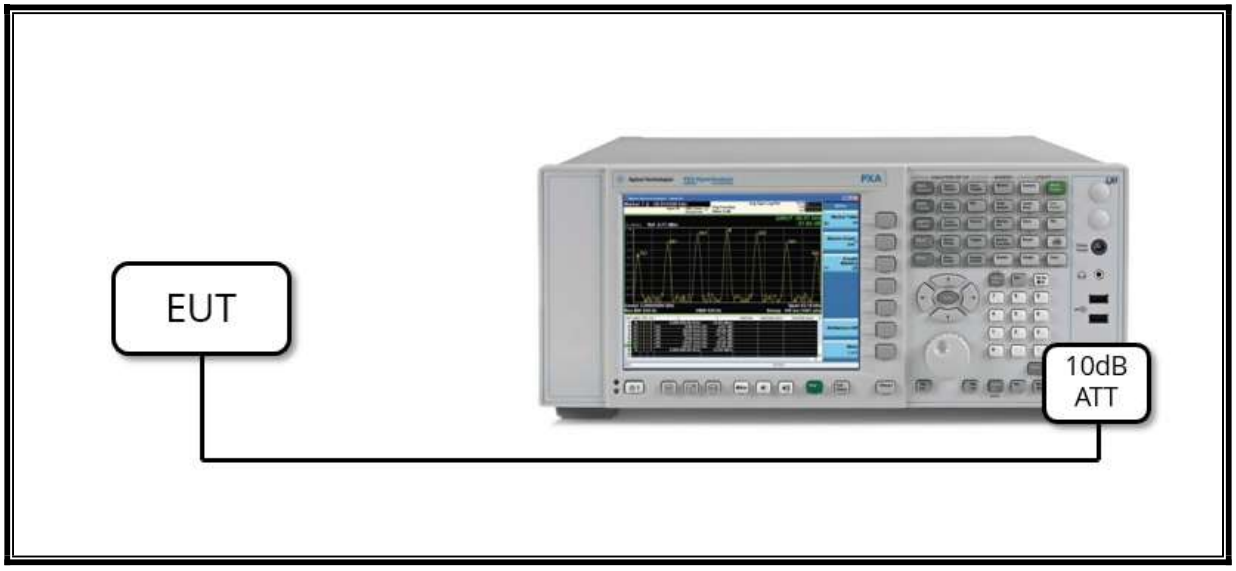
I/O CABLE

I/O Cable List						
Cable No.	**Port**	**# of identical ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	DC Power	1	C Type	Shielded	1.0 m	N/A

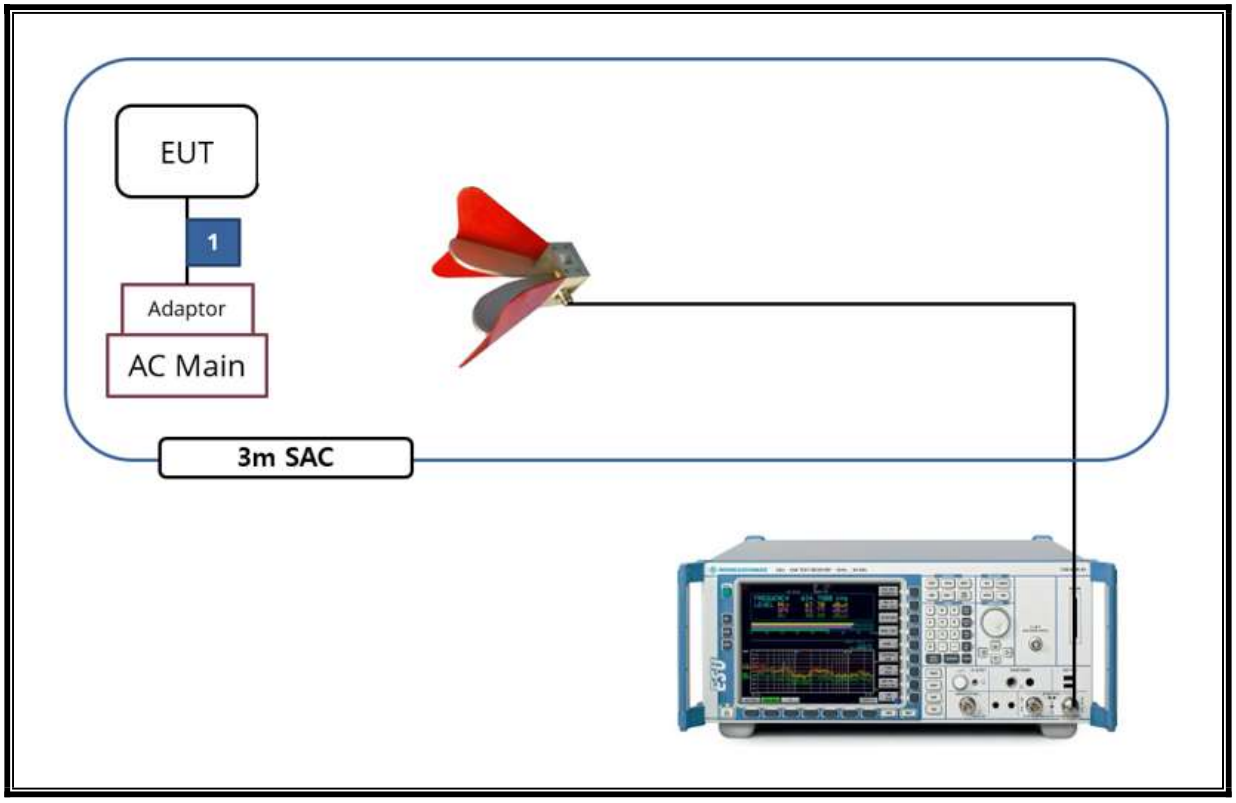
TEST SETUP

The EUT is a stand-alone unit during the tests.
Test software in hidden menu exercised the EUT to enable DTS mode.

SETUP DIAGRAM FOR TESTS (CONDUCTED TEST SETUP)



SETUP DIAGRAM FOR TESTS (RADIATED TEST SETUP)



6. MEASUREMENT METHOD

6 dB BW : ANSI C63.10-2013, Section 11.8.2 Option 2

OUTPUT POWER : ANSI C63.10-2013, Section 11.9.2.3.1 Method AVGPM

POWER SPECTRAL DENSITY : ANSI C63.10-2013, Section 11.10.3 & 11.10.5 Method AVGPSD-1 and Method AVGPSD-2

Out-of-band Emissions (Conducted) : ANSI C63.10-2013, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Non-restricted Bands: ANSI C63.10-2013, Section 11.11 Emissions in nonrestricted frequency bands

Out-of-band Emissions in Restricted Bands : ANSI C63.10-2013, Section 11.12 Emissions in restricted frequency bands

AC Power Line Conducted Emission : ANSI C63.10-2013, Section 6.2

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7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

Test Equipment List				
Description	**Manufacturer**	**Model**	**S/N**	**Cal Due**
Antenna, Bilog, 30MHz-1GHz	SCHWARZBECK	VULB9163	750	2024-08-15
Antenna, Horn, 18 GHz	ETS	3117	00168717	2024-08-21
Antenna, Horn, 40 GHz	ETS	3116C	00166155	2024-08-02
Preamplifier	ETS	3116C-PA	00168841	2024-07-25
Preamplifier, 1000 MHz	Sonoma	310N	341282	2024-07-24
Preamplifier, 18 GHz	Miteq	AFS42-00101800-25-S-42	2029169	2024-07-24
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54170614	2024-07-25
Spectrum Analyzer, 44 GHz	Agilent / HP	N9030A	MY54490312	2024-07-24
Spectrum Analyzer, 44 GHz	KEYSIGHT	N9040B	MY60080268	2025-01-03
Average Power Sensor	Agilent / HP	U2000A	MY54270007	2024-07-23
Average Power Sensor	Agilent / HP	U2000A	MY54260010	2024-07-24
Attenuator	PASTERNACK	PE7087-10	A001	2024-07-23
Attenuator	PASTERNACK	PE7087-10	A008	2024-07-27
EMI Test Receive, 40 GHz	R&S	ESU40	100439	2024-07-23
EMI Test Receive, 40 GHz	R&S	ESU40	100457	2024-07-24
EMI Test Receive, 3 GHz	R&S	ESR3	101832	2024-07-23
Low Pass Filter 5GHz	Micro-Tronics	LPS17541	009	2024-07-23
High Pass Filter 3GHz	Micro-Tronics	HPM17543	010	2024-07-23
High Pass Filter 6GHz	Micro-Tronics	HPS17542	021	2024-07-24
LISN	R&S	ENV-216	101837	2024-07-23
Antenna, Loop, 9kHz-30MHz	R&S	HFH2-Z2	100418	2025-09-06

UL Software			
Description	**Manufacturer**	**Model**	**Version**
Radiated software	UL	UL EMC	Ver 9.5
AC Line Conducted software	UL	UL EMC	Ver 9.5

8. SUMMARY TABLE

FCC Part Section	Test Description	Test Limit	Test Condition	Test Result
15.247 (a)(2)	Occupied Bandwidth(6dB)	> 500kHz	Conducted	Complies
2.1051, 15.247(d)	Band Edge / Conducted Spurious Emission	-30 dBc		Complies
15.247 (b)(3)	TX conducted output power	< 30 dBm		Complies
15.247(e)	PSD	< 8 dBm/3kHz		Complies
15.207(a)	AC Power Line conducted emissions	Section 11	Power Line conducted	Complies
15.205, 15.209	Radiated Spurious Emission	< 54dBuV/m(Av)	Radiated	Complies

9. ANTENNA PORT TEST RESULTS

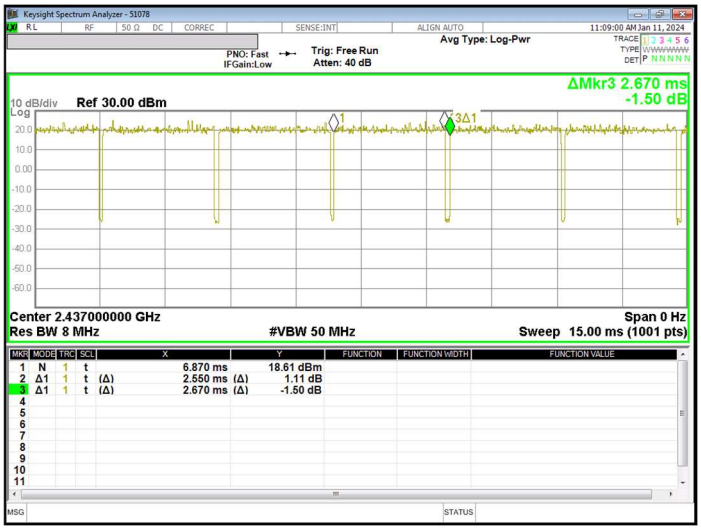
9.1. ON TIME AND DUTY CYCLE

LIMITS

None; for reporting purposes only.

Mode	On Time [ms]	Period [ms]	Duty Cycle X [Linear]	Duty Cycle X [%]	Duty Cycle Correction Factor[dB]	1/T Minimum VBW[kHz]
802.11b MIMO	8.610	8.700	0.990	98.966	-	0.12
802.11g MIMO	2.790	2.890	0.965	96.540	0.15	0.36
802.11n(HT20) MIMO	5.370	5.470	0.982	98.172	-	0.19
802.11ax(HE20) MIMO SU	2.550	2.670	0.955	95.506	0.20	0.39
802.11ax(HE20) MIMO 26T	5.140	5.260	0.977	97.719	0.10	0.19
802.11ax(HE20) MIMO 52T	5.540	5.660	0.979	97.880	0.09	0.18
802.11ax(HE20) MIMO 106T	5.540	5.660	0.979	97.880	0.09	0.18

Note. According to ANSI C63.10 Section 11.6, do not apply the Duty Cycle Correction Factor judging that a duty cycle of greater than or equal to 98% is continuous signal.



802.11ax HE20 SU

9.2. 6 dB BANDWIDTH

LIMITS

FCC §15.247 (a) (2)
The minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

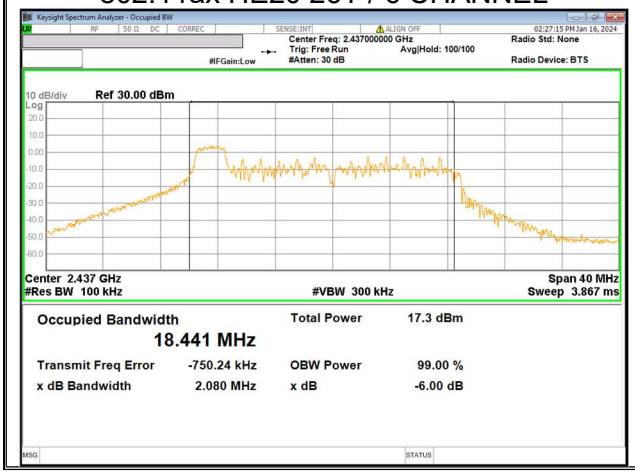
Reference to KDB 558074 D01 15.247 Meas Guidance: The transmitter output is connected to a spectrum analyzer with the RBW set to100 kHz, the VBW >= 3 x RBW, peak detector and max hold.

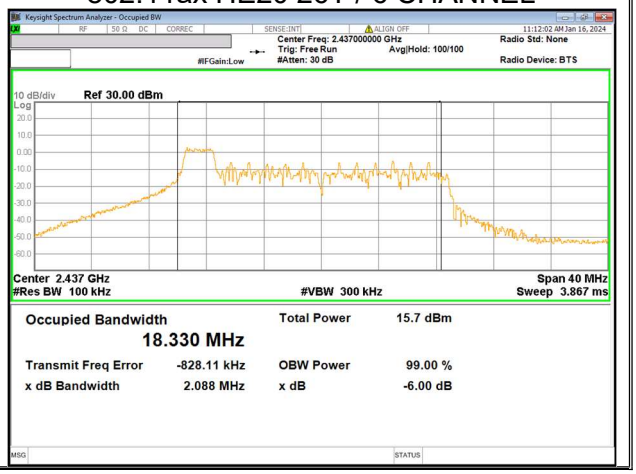
RESULTS

- Please refer to the next page

WORST CASE TEST PLOTS

ANT1	ANT2
802.11ax HE20 26T / 6 CHANNEL	802.11ax HE20 26T / 6 CHANNEL





9.2.1. 802.11b MIMO MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]		Minimum Limit [MHz]
		ANT 1	ANT 2	
1	2 412	8.09	8.10	0.5
6	2 437	8.09	8.10	
11	2 462	8.54	8.10	
12	2 467	7.58	8.09	
13	2 472	7.57	8.08	
Worst		7.57	8.08	

9.2.2. 802.11g MIMO MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]		Minimum Limit [MHz]
		ANT 1	ANT 2	
1	2 412	15.34	15.16	0.5
6	2 437	16.36	16.39	
10	2 457	16.42	16.38	
11	2 462	15.98	16.41	
12	2 467	15.94	16.42	
13	2 472	13.81	15.36	
Worst		13.81	15.16	

9.2.3. 802.11n HT20 MIMO MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]		Minimum Limit [MHz]
		ANT 1	ANT 2	
1	2 412	15.12	15.89	0.5
2	2 417	18.00	17.74	
6	2 437	17.19	17.64	
9	2 452	17.63	17.64	
10	2 457	17.99	17.64	
11	2 462	16.66	17.64	
12	2 467	16.30	17.65	
13	2 472	14.21	15.74	
Worst		14.21	15.74	

9.2.4. 802.11ax HE20(26T) MIMO MODE IN THE 2.4 GHz BAND

Channel	Frequency [MHz]	6 dB Bandwidth [MHz]		Minimum Limit [MHz]
		ANT 1	ANT 2	
1	2 412	10.75	14.52	0.5
6	2 437	2.08	2.09	
11	2 462	2.11	2.10	
12	2 467	2.09	2.12	
13	2 472	12.04	11.99	
Worst		**2.08**	**2.09**	

9.3. OUTPUT POWER

LIMITS

FCC §15.247 (b) (3)

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt, based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

Measurements perform using a wideband RF frame average power sensor.
The cable assembly insertion loss and duty cycle correction factor was entered as an offset in the power sensor to allow for direct reading of power.
Output power measurement was performed utilizing the 8.3.2.3 under KDB558074 D01 15.247 Meas Guidance.

DIRECTIONAL ANTENNA GAIN

The TX chains are correlated and the antenna gain is unequal among the chains.
The directional gain is:

Bands [MHz]	ANT 1 [dBi]	ANT 2 [dBi]	Correlated Directional Gain [dBi]
2 412 - 2 472	-6.01	-7.31	-3.63

Note. Since the correlated directional gain does not exceed 6dBi, it is not mentioned further below.

9.3.1. TEST RESULTS

- 802.11b,g,n,ax(SU) mode

Mode	Channel	Frequency [MHz]	SISO Average Power [dBm]		MIMO Average Power [dBm]			Power Limit [dBm]
			ANT1	ANT2	ANT1	ANT2	Total Corr'd Power [dBm]	
802.11b	1	2 412	17.78	16.05	17.48	16.44	20.00	30.00
	6	2 437	18.42	15.99	18.15	16.01	20.22	
	11	2 462	17.00	16.50	17.81	16.43	20.18	
	12	2 467	7.62	5.96	7.71	5.88	9.90	
	13	2 472	7.64	6.10	7.31	5.97	9.70	
Worst Case			18.42	16.50			20.22	
802.11g	1	2 412	15.55	14.08	15.43	14.03	17.80	
	6	2 437	16.50	14.91	16.51	14.42	18.60	
	10	2 457	15.54	14.90	15.33	14.54	17.96	
	11	2 462	12.15	10.98	11.77	10.80	14.32	
	12	2 467	7.57	5.79	7.33	5.71	9.61	
	13	2 472	-1.50	-2.03	-1.74	-2.24	1.03	
Worst Case			16.50	14.91			18.60	
802.11n HT20	1	2 412	13.39	11.84	13.18	11.54	15.45	
	2	2 417	15.54	14.21	15.65	14.57	18.15	
	6	2 437	15.74	14.94	16.19	14.33	18.37	
	9	2 452	15.88	14.97	14.80	14.71	17.77	
	10	2 457	15.25	14.57	14.73	13.74	17.27	
	11	2 462	12.16	11.78	12.22	11.02	14.67	
	12	2 467	5.37	4.33	5.27	3.77	7.59	
	13	2 472	0.60	-0.14	0.17	-0.15	3.02	
Worst Case			15.88	14.97			18.37	
802.11ax HE20(SU)	1	2 412	16.30	14.28	15.77	14.46	18.17	
	6	2 437	16.45	14.14	16.15	14.10	18.26	
	9	2 452	15.50	14.55	15.63	14.94	18.31	
	10	2 457	14.22	13.25	14.32	13.10	16.76	
	11	2 462	13.12	12.22	12.86	11.88	15.41	
	12	2 467	4.18	2.85	3.87	2.81	6.38	
	13	2 472	5.17	3.81	4.62	3.83	7.25	
Worst Case			16.45	14.55			18.31	

- Calculation of Output Power result

Average Power = Meas. Power + Duty Cycle CF / Total Corr'd Power = ANT1's Avearage Power + ANT2's Average Power

- 802.11ax (RU) mode

Channel	Frequency [MHz]	Tones	RU Offset	SISO Average Power [dBm]		MIMO Average Power [dBm]			Power Limit [dBm]
				ANT1	ANT2	ANT1	ANT2	Total Corr'd Power [dBm]	
1	2 412	26T	0	8.75	6.72	9.13	7.24	11.30	30.00
			4	8.32	6.82	8.67	7.37	11.08	
			8	7.50	6.91	7.63	7.21	10.44	
6	2 437	26T	0	6.80	6.96	7.87	7.32	10.61	
			4	9.20	6.78	9.78	7.02	11.63	
			8	8.75	7.15	8.73	7.51	11.17	
11	2 462	26T	0	6.45	7.55	7.82	7.76	10.80	
			4	6.70	7.28	8.20	7.74	10.99	
			8	9.69	6.40	9.79	6.30	11.40	
12	2 467	26T	0	2.39	3.36	2.43	3.43	5.97	
			4	4.36	2.67	4.70	2.97	6.93	
			8	4.34	2.04	3.60	2.15	5.95	
13	2 472	26T	0	-6.19	-4.35	-5.63	-4.76	-2.16	
			4	-4.23	-5.13	-4.32	-5.85	-2.01	
			8	-7.13	-6.65	-7.09	-6.81	-3.94	
Worst Case				9.69	7.55			11.63	

9.4. POWER SPECTRAL DENSITY

LIMITS

FCC §15.247 (e)

The power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

Power Spectral Density was performed utilizing the section8.4 under KDB558074 D01 15.247 Meas Guidance.

RESULTS

- Please refer to the next page

WORST CASE TEST PLOTS

ANT 1	ANT 2
802.11b / 6 Channel (MIMO)	802.11b / 6 Channel (MIMO)
	

9.4.1. 802.11b/g/n HT20/ax HE20 MODE TEST RESULTS

- MIMO Mode

Mode	Channel	Frequency [MHz]	Meas PSD [dBm/100kHz]		DCCF	Total Corr'd PSD [dBm/100kHz]	PSD Limit [dBm/3kHz]
			ANT1	ANT2			
802.11b	1	2 412	1.60	-0.59	0.00	3.65	8.00 Note
	6	2 437	1.94	-0.50	0.00	3.90	
	11	2 462	1.00	-0.99	0.00	3.13	
	12	2 467	-8.40	-10.67	0.00	-6.38	
	13	2 472	-8.53	-10.65	0.00	-6.45	
802.11g	1	2 412	-3.44	-5.59	0.15	-1.22	
	6	2 437	-2.72	-5.71	0.15	-0.80	
	10	2 457	-3.75	-6.23	0.15	-1.65	
	11	2 462	-6.28	-9.41	0.15	-4.41	
	12	2 467	-11.62	-13.83	0.15	-9.42	
	13	2 472	-20.10	-21.53	0.15	-17.59	
802.11n HT20	1	2 412	-5.62	-8.04	0.00	-3.65	
	2	2 417	-3.45	-5.46	0.00	-1.33	
	6	2 437	-3.01	-5.99	0.00	-1.24	
	9	2 452	-3.63	-4.95	0.00	-1.23	
	10	2 457	-4.29	-6.33	0.00	-2.18	
	11	2 462	-5.19	-8.51	0.00	-3.53	
	12	2 467	-13.79	-16.14	0.00	-11.80	
	13	2 472	-18.08	-19.61	0.00	-15.77	
802.11ax HE20 SU	1	2 412	-4.44	-6.36	0.20	-2.08	
	6	2 437	-4.88	-7.60	0.20	-2.82	
	9	2 452	-4.66	-6.47	0.20	-2.26	
	10	2 457	-6.01	-7.58	0.20	-3.51	
	11	2 462	-6.36	-8.44	0.20	-4.07	
	12	2 467	-16.66	-19.23	0.20	-14.55	
	13	2 472	-15.77	-17.44	0.20	-13.31	

- MIMO Mode(802.11ax HE20 RU mode)

Channel	Frequency [MHz]	Tones	RU Offset	Meas PPSD [dBm/100kHz]		DCCF	Total Corr'd PPSD [dBm/100kHz]	PSD Limit [dBm/3kHz]
				ANT1	ANT2			
1	2 412	26T	0	-6.17	-9.15	0.10	-4.30	8.00 Note
			4	-3.14	-4.98	0.10	-0.85	
			8	-7.67	-8.52	0.10	-4.97	
6	2 437	26T	0	-5.07	-5.52	0.10	-2.18	
			4	-3.24	-6.14	0.10	-1.34	
			8	-3.40	-5.74	0.10	-1.30	
11	2 462	26T	0	-5.10	-5.65	0.10	-2.26	
			4	-4.55	-5.77	0.10	-2.01	
			8	-1.78	-6.13	0.10	-0.32	

Calculation of Output PSD result
- 1TX : Corr'd PSD = Meas PSD + Duty Cycle CF
- 2TX : Total PSD = ANT1 Meas PSD + ANT2 Meas PSD + Duty Cycle CF

Note. RBW 100kHz measurement data is lower than 3kHz limit.

UL KOREA LTD. Suwon Laboratory FORM ID: FCC_15C(05)
218 Maeyeong-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16675, Korea TEL: (031) 337-9902 FAX: (031) 213-5433

9.5. CONDUCTED SPURIOUS EMISSIONS

LIMITS

FCC §15.247 (d)

Output power was measured based on the use of average measurement, therefore the required attenuation is 30 dB.

RESULTS

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9.5.1. 802.11b MODE

2TX Antenna 1

1 Channel Band-edge

Out-Of-Band 1 Channel

6 Channel Band-edge

Out-Of-Band 6 Channel

11 Channel Band-edge

Out-Of-Band 11 Channel

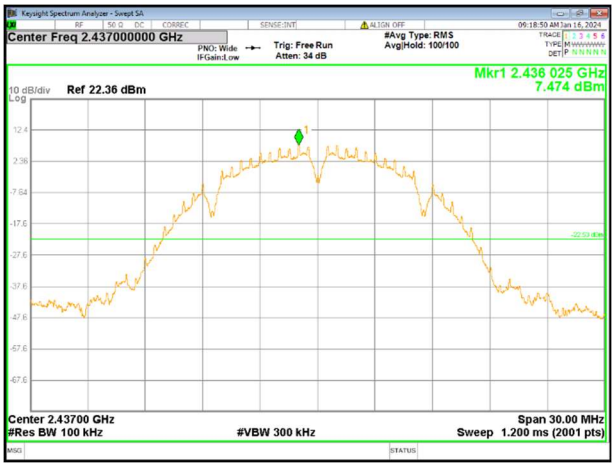
12 Channel Band-edge

13 Channel Band-edge

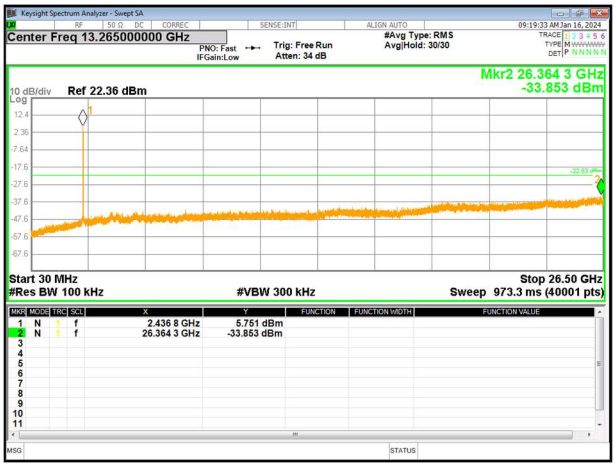
2TX Antenna 2

1 Channel Band-edge

Out-Of-Band 1 Channel

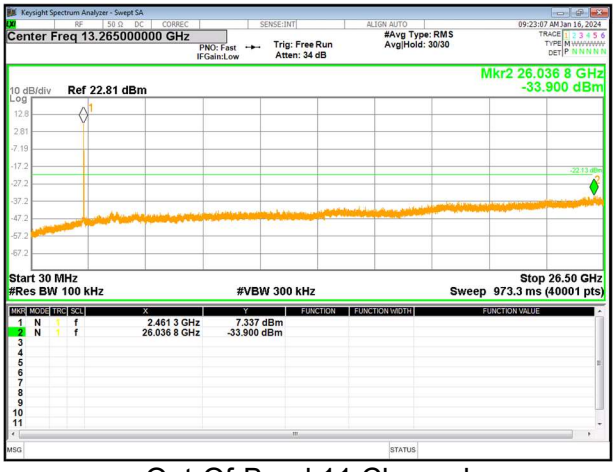


6 Channel Band-edge

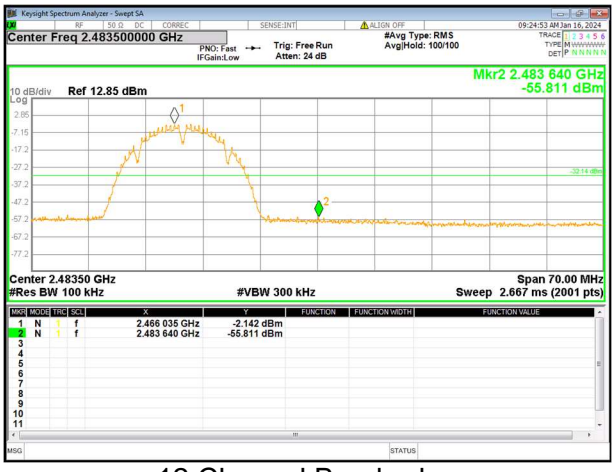


Out-Of-Band 6 Channel

11 Channel Band-edge



Out-Of-Band 11 Channel

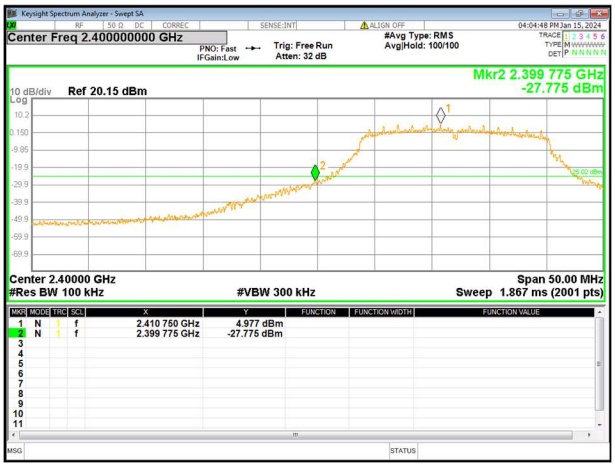


12 Channel Band-edge

13 Channel Band-edge

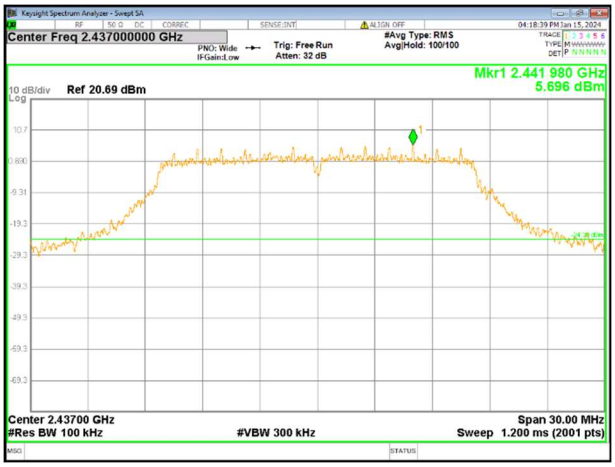
9.5.2. 802.11g MODE

2TX Antenna 1

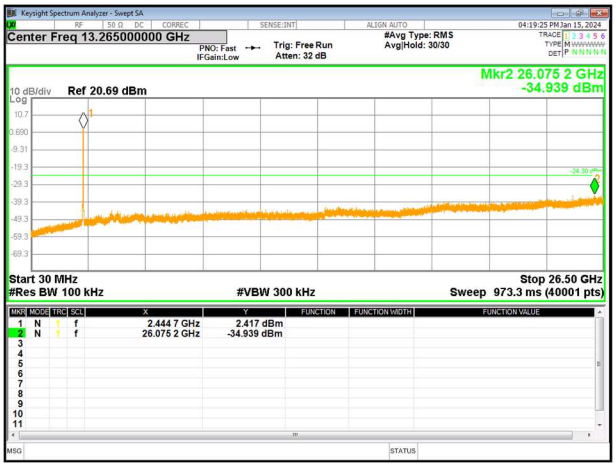


1 Channel Band-edge

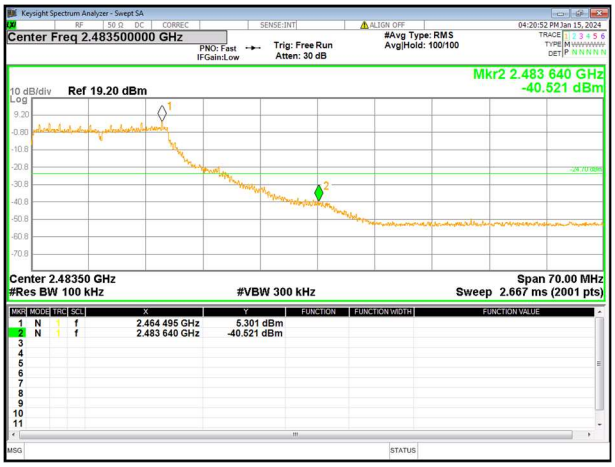
Out-Of-Band 1 Channel



6 Channel Band-edge

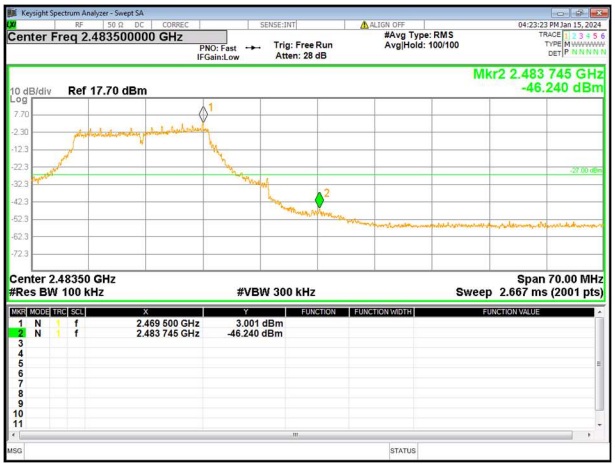


Out-Of-Band 6 Channel



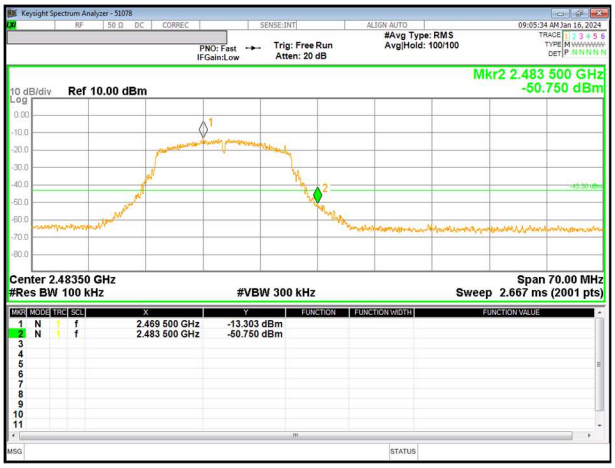
10 Channel Band-edge

Out-Of-Band 10 Channel



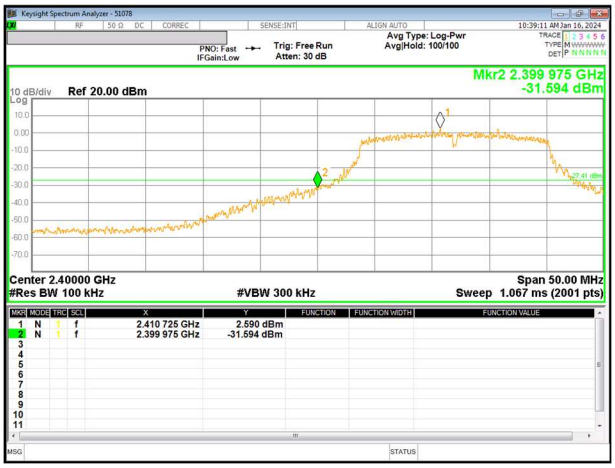
11 Channel Band-edge

12 Channel Band-edge



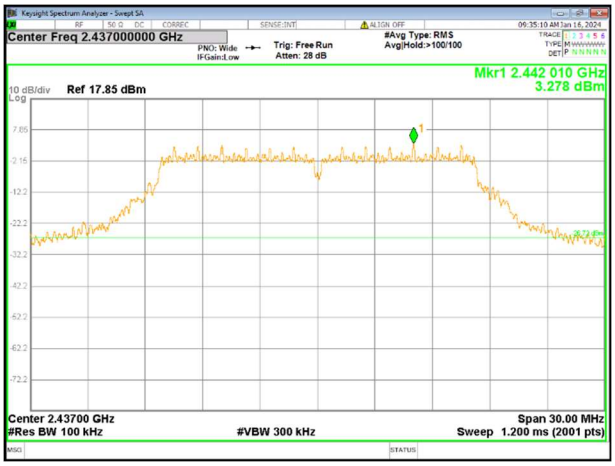
13 Channel Band-edge

2TX Antenna 2



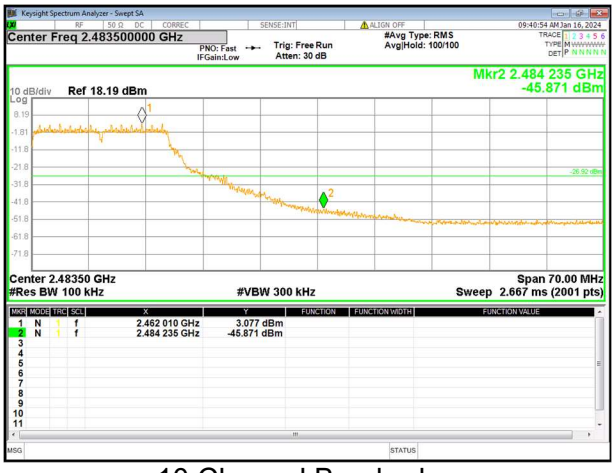
1 Channel Band-edge

Out-Of-Band 1 Channel

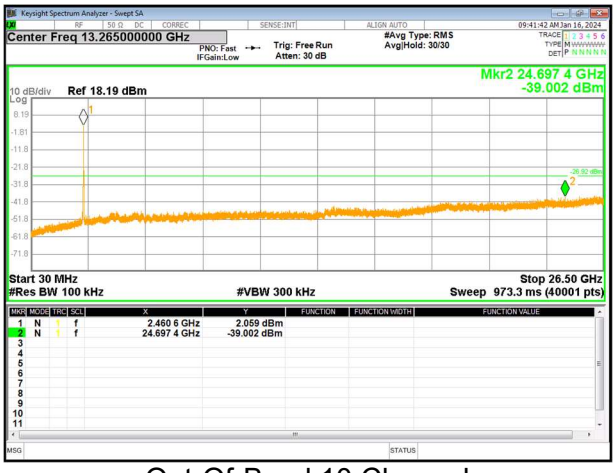


6 Channel Band-edge

Out-Of-Band 6 Channel



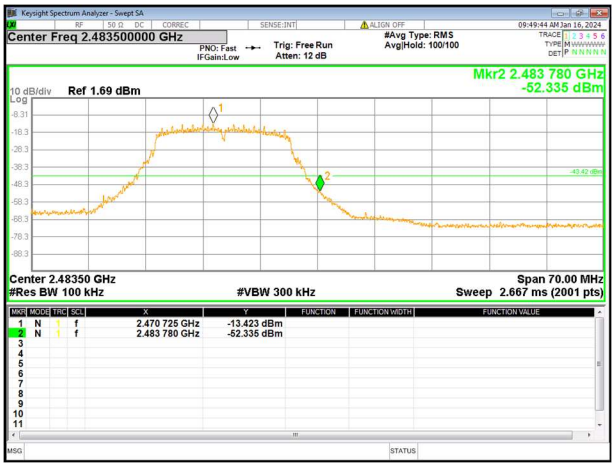
10 Channel Band-edge



Out-Of-Band 10 Channel

11 Channel Band-edge

12 Channel Band-edge



13 Channel Band-edge