

CFR 47 FCC PART 90

CERTIFICATION TEST REPORT

For

Mobile Two-Way Radios

MODEL NAME: MXM600

FCC ID: AZ492FT7185

REPORT NUMBER: 4791498473-1-RF-5

ISSUE DATE: August 14, 2025

Prepared for

**Motorola Solutions Malaysia SDN BHD
Plot 2A, Medan Bayan Lepas, Mukim 12 S.W.D, 11900 Bayan Lepas, Penang,
Malaysia**

Prepared by

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V0	January 7, 2025	Initial Issue	Fanny Huang
V1	January 27, 2025	Updated the status in section 6.1	Fanny Huang
V2	June 13, 2025	Updated operation frequency range and antenna type description	Fanny Huang
V3	August 8, 2025	Retested and updated section 6.2 test data	Fanny Huang
V4	August 14, 2025	Updated antenna information	Fanny Huang

Summary of Test Results			
Clause	Test Items	FCC Rules	Test Results
1	RF Power Output	CFR 47 FCC Part 90.205	Pass
2	Emission Bandwidth	CFR 47 FCC Part 90.209 Part 2.1049	Pass
3	Transmitter Radiated Spurious Emission	Part 2.1053	Pass (Note 3)
4	Transmitter Conducted Spurious Emissions	Part 2.1051	Pass
5	Adjacent channel power	CFR 47 FCC Part 90.221	Pass
6	Frequency stability	CFR 47 FCC Part 90.213	Pass
<p>Note 1: This test report is only published to and used by the applicant, and it is not for evidence purpose in China.</p> <p>Note 2: The measurement result for the sample received is <Pass> according to < CFR 47 FCC PART 90 > when <Accuracy Method> decision rule is applied.</p> <p>Note 3: Worst case: 62.76dBuV/m, margin: -19.44dB.</p>			

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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: Motorola Solutions Inc
Address: Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia

Manufacturer Information

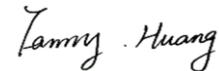
Company Name: Motorola Solutions Malaysia SDN BHD
Address: Plot 2A, Medan Bayan Lepas, Mukim 12 SWD, 11900 Bayan Lepas, Penang, Malaysia

EUT Information

EUT Description: Mobile Two-Way Radios
Product Marketing Name (PMN): MXM600
Hardware Version Identification Number (HVIN): AZM79UFT6TZ1AN, AZM79UFT6TZ6AN
Sample Received Date: November 4, 2024
Sample ID: 7783467
Date of Tested: November 4, 2024 to August 7, 2025

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 FCC PART 90 SUBPART I	PASS

Prepared By:



Fanny Huang

Engineer Project Associate

Checked By:



Kebo Zhang

Senior Project Engineer

Approved By:



Stephen Guo

Operations Manager

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.26-2015, CFR 47 FCC Part 2, CFR 47 FCC Part 90.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	<p>A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA.</p> <p>FCC (FCC Designation No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules</p> <p>ISED (Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with ISED. The Company Number is 21320 and the test lab Conformity Assessment Body Identifier (CABID) is CN0046.</p> <p>VCCI (Registration No.: G-20192, C-20153, T-20155 and R-20202) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20192 and R-20202 Shielding Room B, the VCCI registration No. is C-20153 and T-20155</p>
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Note 1: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, Song Shan Lake Hi tech Development Zone, Dongguan, 523808, China

Note 2: The test anechoic chamber in UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

Note 3: For below 30 MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. And these measurements below 30 MHz had been correlated to measurements performed on an OFS.

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 recognize national standards.

4.2. MEASUREMENT UNCERTAINTY

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

Test Item	Uncertainty
Conduction emission	3.62 dB
Radiated Emission (Included Fundamental Emission) (9 kHz ~ 30 MHz)	2.2 dB
Radiated Emission (Included Fundamental Emission) (30 MHz ~ 1 GHz)	4.00 dB
Radiated Emission (Included Fundamental Emission) (1 GHz to 26 GHz)	5.78 dB (1 GHz ~ 18 GHz)
	5.23 dB (18 GHz ~ 26 GHz)
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level using a coverage factor of k=2.	

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Description:	Mobile Two-Way Radios		
Product Marketing Name (PMN):	MXM600		
Hardware Version Identification Number (HVIN):	AZM79UFT6TZ1AN, AZM79UFT6TZ6AN		
FVIN	B65.000.10089		
Product Description	Operation Frequency	806 - 825 MHz 851 - 870 MHz	
	Modulation Type	pi/4 DQPSK	
	Channel Separation	25kHz	
	Communication Type	Digital	
	Max Output Power	11.88W	
Normal Test Voltage:	DC 13.2 V		

5.2. CHANNEL LIST

Test Channel	Frequency (MHz)	Channel Spacing (kHz)	Modulation Type
1	809.0125	25	pi/4 DQPSK
2	814.9875	25	pi/4 DQPSK
3	823.9875	25	pi/4 DQPSK
4	854.0125	25	pi/4 DQPSK
5	860.0125	25	pi/4 DQPSK
6	868.8875	25	pi/4 DQPSK

5.3. TEST CHANNEL CONFIGURATION

Test Channel	Frequency (MHz)	Channel Spacing (kHz)	Modulation Type
1	809.0125	25	pi/4 DQPSK
2	814.9875	25	pi/4 DQPSK
3	823.9875	25	pi/4 DQPSK
4	854.0125	25	pi/4 DQPSK
5	860.0125	25	pi/4 DQPSK
6	868.8875	25	pi/4 DQPSK

5.4. DESCRIPTION OF AVAILABLE ANTENNAS

Ant.	Frequency (MHz)	Antenna Type	Gain (dBi) (without cable loss)	Cable Loss(dB)	Total Gain(dBi) (with cable loss)	Model Number
1	806 - 870	Monopole	5.0	2.3	2.7	GMAF4413A

Mode	Transmit and Receive Mode	Description
pi/4 DQPSK	1TX, 1RX	Chain 1 can be used as transmitting/receiving antenna.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Item	Equipment	Brand Name	SN	Remarks
1	Laptop	HP	5CG65074RF	/
2	UART	/	/	/

I/O CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
1	USB	/	/	2.0	/

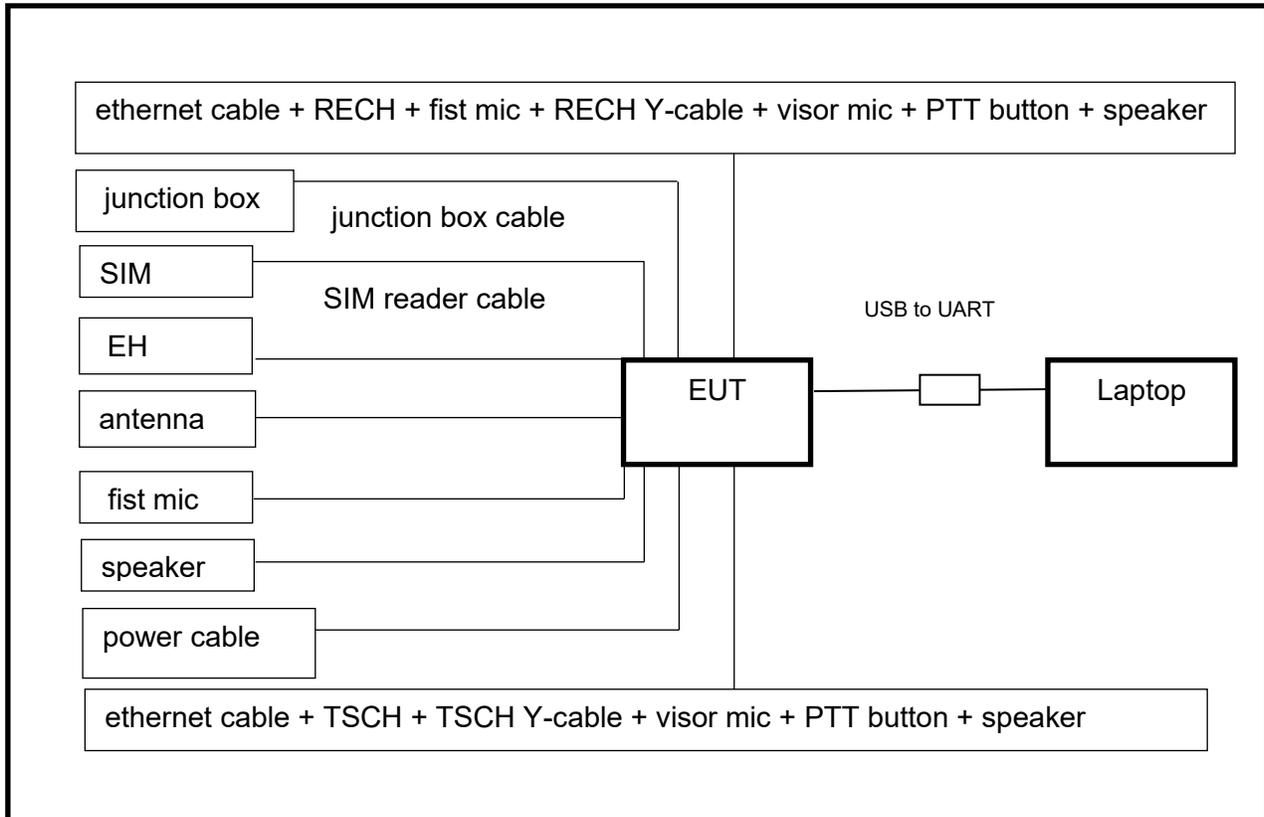
ACCESSORIES

Item	Accessory	Brand Name	Model Name	Description
1	antenna	/	GMAF4413A	/
2	dual remote	/	PMLN8597A	/
3	remote-mount (RECH)	/	PMVN4408A	/
4	remote-mount (TSCH)	/	PMWN4025B	/
5	fist mic	/	PMMN4086A	/
6	fist mic	/	RMN5107B	/
7	visor mic*2	/	RMN5054B	/
8	speaker	/	RSN4003A	/
9	speaker	/	RSN4002A	/
10	speaker	/	GMSN4066A	/
11	PTT button	/	RLN4857B	/
12	PTT button	/	RLN5926A	/
13	junction box	/	GMLN7825A	/
14	power	/	PMKN4275A	/
15	Ethernet*2	/	PMKN4135B	/
16	RECH Y-cable	/	PMKN4133A	/
17	TSCH Y-cable	/	PMKN4134A	/
18	junction box	/	PMKN4302A	/

TEST SETUP

The EUT can work in engineering mode with a software through a Laptop.

SETUP DIAGRAM FOR TESTS



5.6. MEASURING INSTRUMENT AND SOFTWARE USED

Radiated Emissions						
Equipment	Manufacturer	Model No.	Serial No.	Upper Last Cal.	Last Cal.	Due Date
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	/	Sep.28, 2024	Sep.27, 2025
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130959	/	May.08, 2023	May.07, 2026
Preamplifier	HP	8447D	2944A09099	/	Sep.28, 2024	Sep.27, 2025
EMI Measurement Receiver	R&S	ESR26	101377	/	Sep.28, 2024	Sep.27, 2025
Horn Antenna	TDK	HRN-0118	130939	Apr.29, 2022	Dec.10, 2024	Dec.11, 2027
Preamplifier	TDK	PA-02-0118	TRS-305-00067	/	Sep.28, 2024	Sep.27, 2025
Horn Antenna	Schwarzbeck	BBHA9170	697	/	Jun 30, 2024	Jun 29, 2027
Preamplifier	TDK	PA-02-2	TRS-307-00003	/	Sep.28, 2024	Sep.27, 2025
Preamplifier	TDK	PA-02-3	TRS-308-00002	/	Sep.28, 2024	Sep.27, 2025
Software						
Description			Manufacturer	Name	Version	
Test Software for Radiated Emissions			Farad	EZ-EMC	Ver. UL-3A1	

Other instruments					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
RF COMMUNICATIONS TEST SET	HP	8920B	US35320976	Sep.28, 2024	Sep.27, 2025
Signal & Spectrum analyzer	R&S	FSW	1312.8000K26-103950-sj	Sep.28, 2024	Sep.27, 2025
MXG Vector Signal Generator	Keysight	N5182B	MY56200284	Sep.28, 2024	Sep.27, 2025
MXG Vector Signal Generator	Keysight	N5172B	MY56200301	Sep.28, 2024	Sep.27, 2025
DC power supply	Array	3662A	A1512015	Sep.28, 2024	Sep.27, 2025

6. TRANSMITTER TEST PARAMETERS

6.1. RF OUTPUT POWER

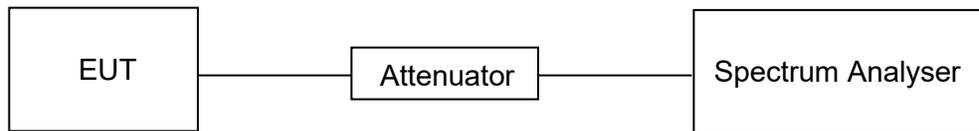
LIMITS

Per FCC §2.1046 and §90.205: Maximum ERP is dependent upon the station's antenna HAAT and required service area.

TEST PROCEDURE

- (1) The DUT transmitter connected to Power Meter using the 30 dB attenuator and power sensor with above setup.
- (2) Path loss for the measurement included.
- (3) All the measurement was done at low, mid, high frequency for each band.
- (4) Record the power into the test report.

TEST SETUP



TEST ENVIRONMENT

Temperature	24.2 °C	Relative Humidity	53 %
Atmosphere Pressure	101 kPa	Test Voltage	DC 13.2 V

RESULT

ERP:

Test Channel	Frequency (MHz)	Output Power (dBm) High Power	ERP (dBm) High Power	Output Power (dBm) Low Power	ERP (dBm) Low Power
1	809.0125	40.54	41.09	34.55	35.10
2	814.9875	40.59	41.14	34.89	35.44
3	823.9875	40.53	41.08	34.73	35.28
4	854.0125	40.54	41.09	34.59	35.14
5	860.0125	40.55	41.10	34.68	35.23
6	868.8875	40.53	41.08	34.70	35.25

6.2. TRANSMITTER CONDUCTED SPURIOUS EMISSION

LIMITS

EIRP (dBm) = E (dB μ V/m) + 20log(D) - 104.8; where D is the measurement distance (in the far field region) in m. when m = 3, EIRP (dBm) = E (dB μ V/m) – 95.2

For 25 kHz Channel Separation mode: 43 + 10 log (Pwatts)

Calculation: Limit (dBm) =EL-43-10log10 (TP)

Notes: EL is the emission level of the Output Power expressed in dBm, In this application, the EL is P(dBm).

Limit (dBm) = P(dBm)-43-10 log (Pwatts) = -13 dBm

Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m

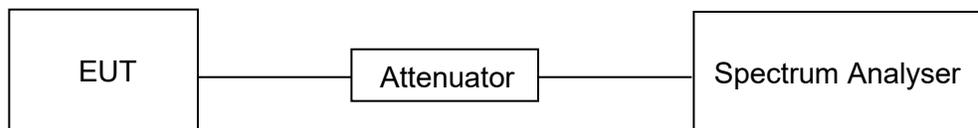
TEST PROCEDURE

- (1) The DUT transmitter connected to Spectrum Analyzer using the 35 dB attenuator.
- (2) Path loss for the measurement included.
- (3) All the measurement was done at low, mid, high frequency for each band.
- (4) Record the test result into the test report.

The Spectrum Analyzer using the following settings for reference level measurement:

Frequency Range	RBW	VBW
9 kHz – 150 kHz	1 kHz	3 kHz
150 kHz – 30 MHz	10 kHz	30 kHz
30 MHz – 1 GHz	100 kHz	300 kHz
1 GHz – 12.75 GHz	1 MHz	3 MHz

TEST SETUP



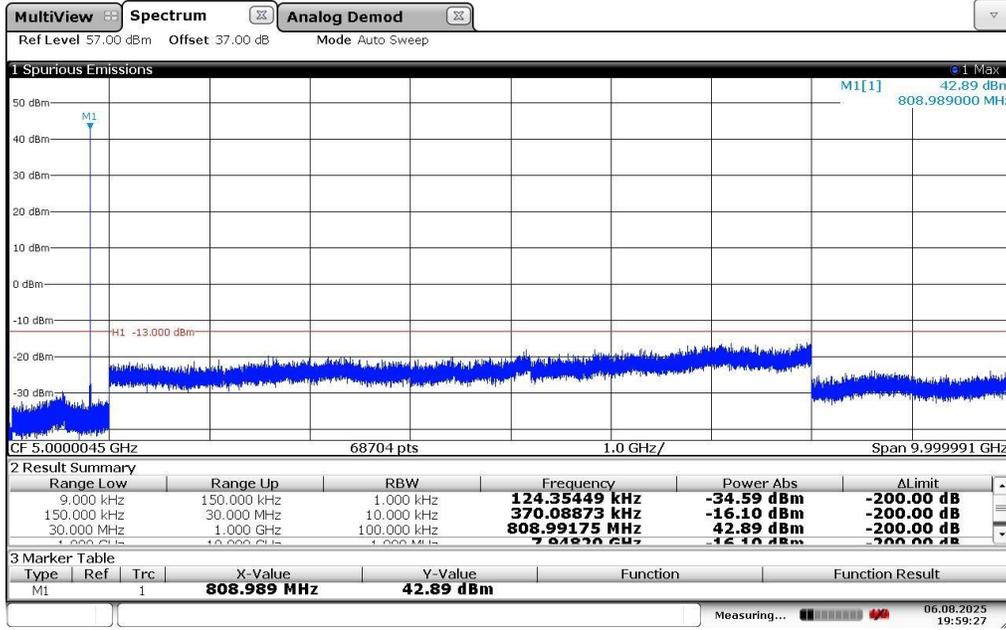
TEST ENVIRONMENT

Temperature	24.2 °C	Relative Humidity	53 %
Atmosphere Pressure	101 kPa	Test Voltage	DC 13.2 V

RESULT

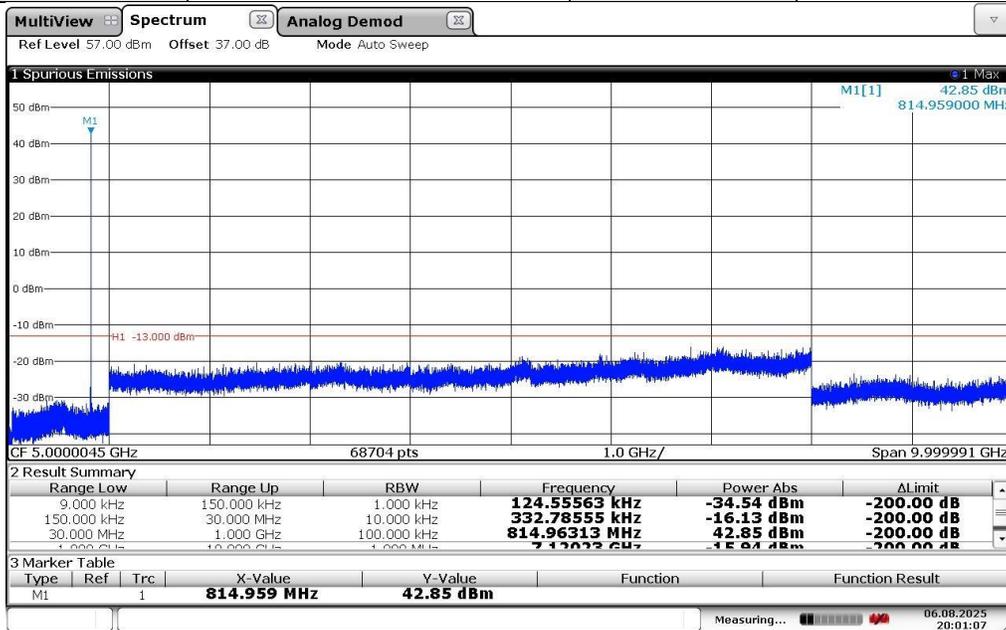
High Power

Measurement Method	Conducted	Test Channel	809.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



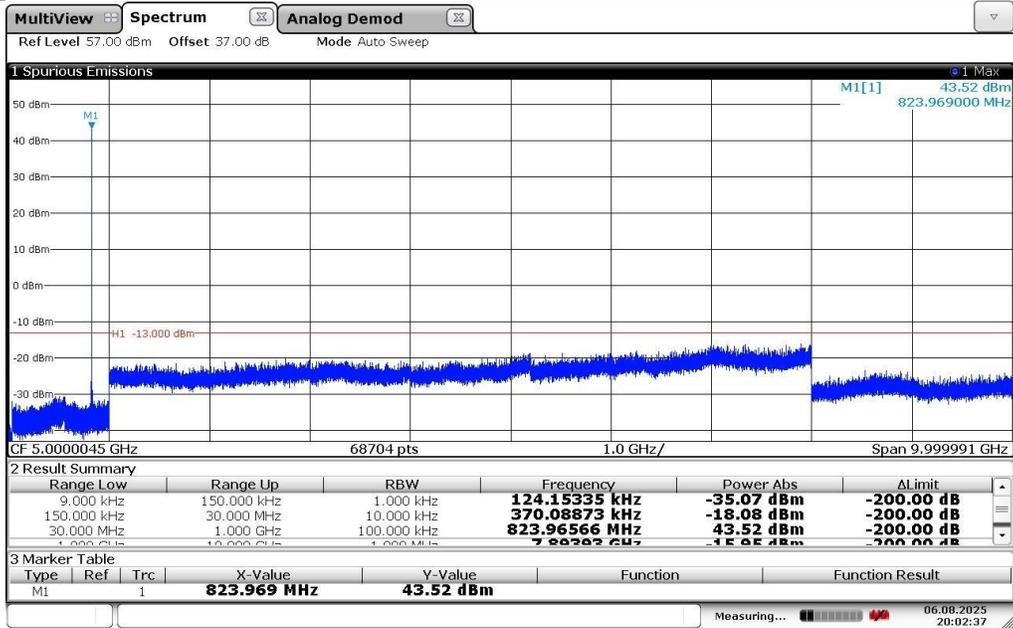
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Measurement Method	Conducted	Test Channel	814.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



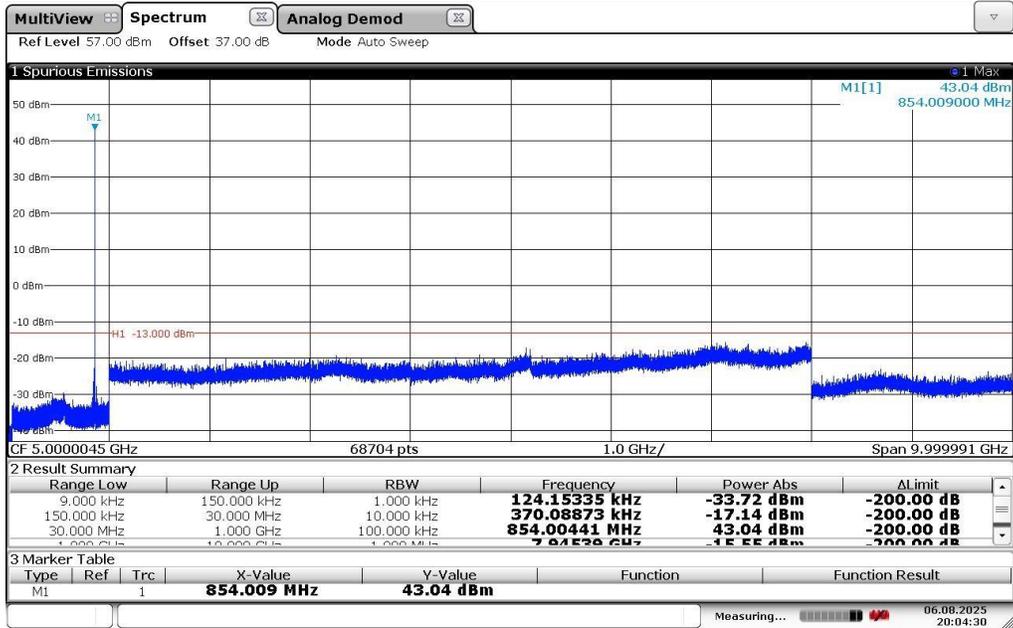
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Measurement Method	Conducted	Test Channel	823.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



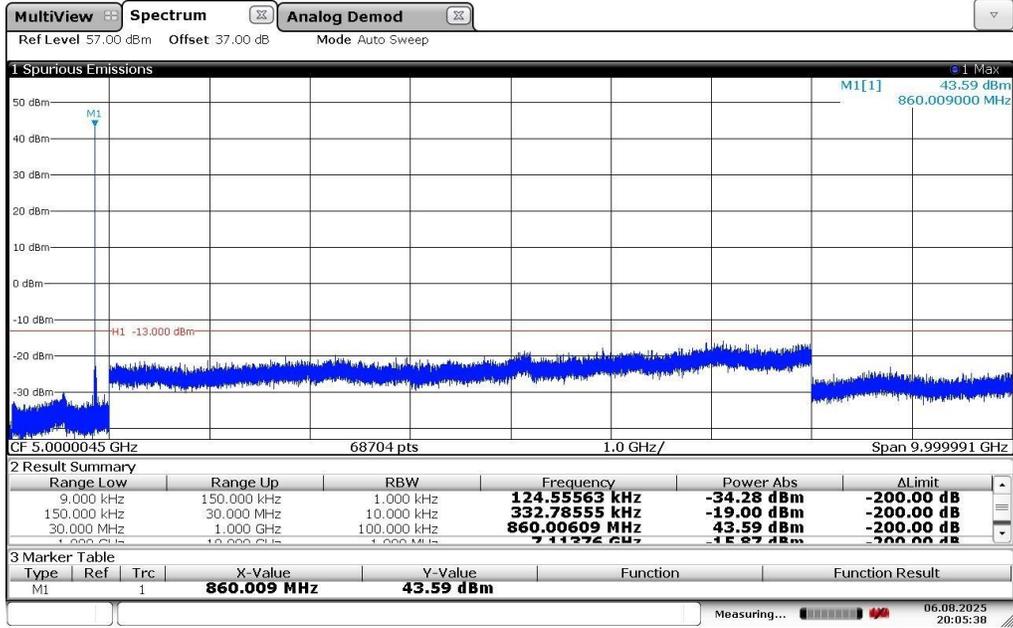
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Measurement Method	Conducted	Test Channel	854.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



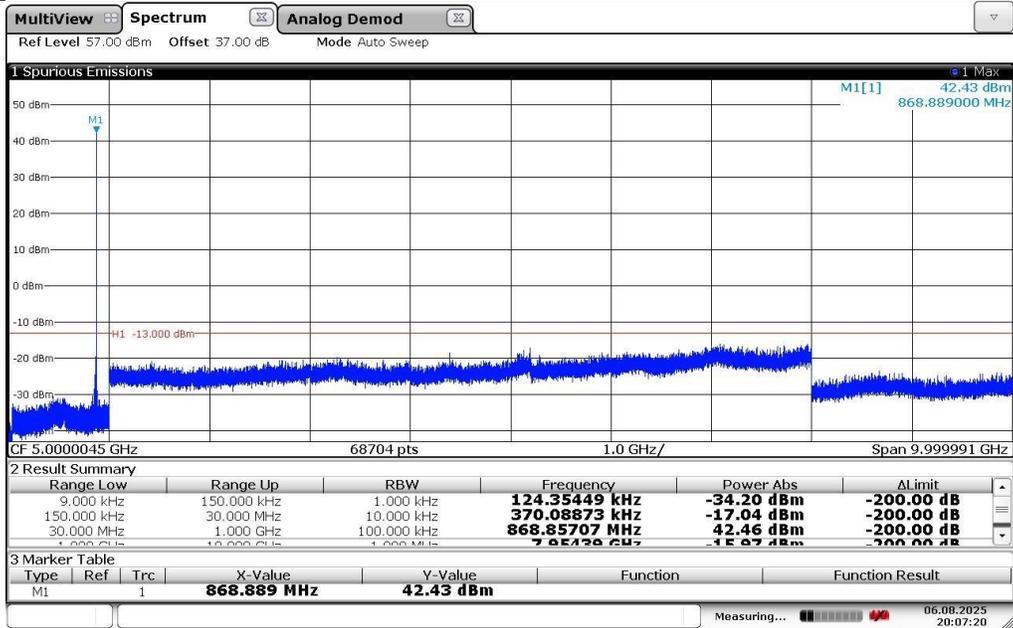
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Measurement Method	Conducted	Test Channel	860.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



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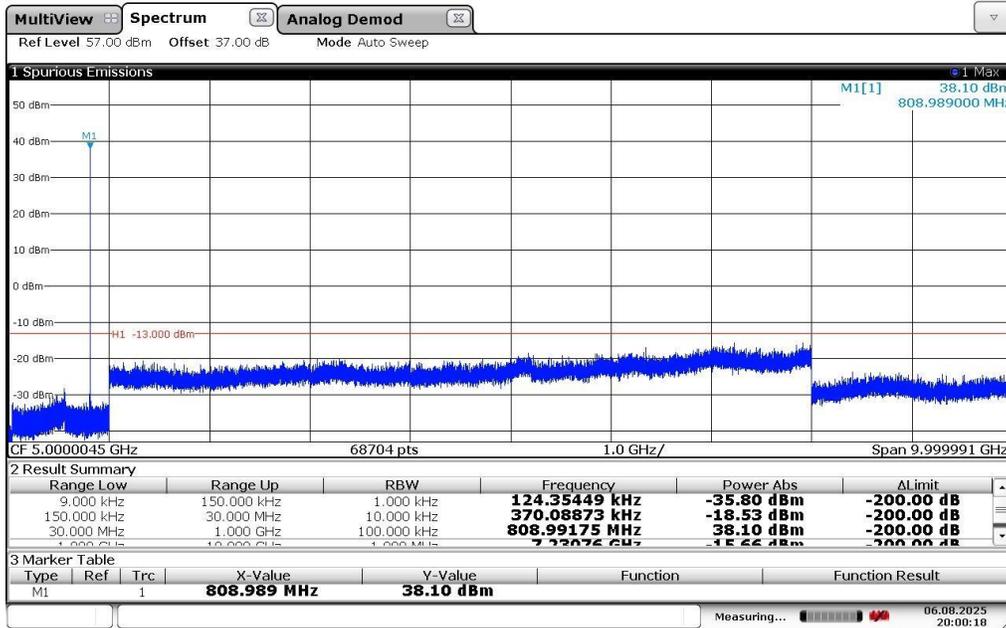
Measurement Method	Conducted	Test Channel	868.8875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



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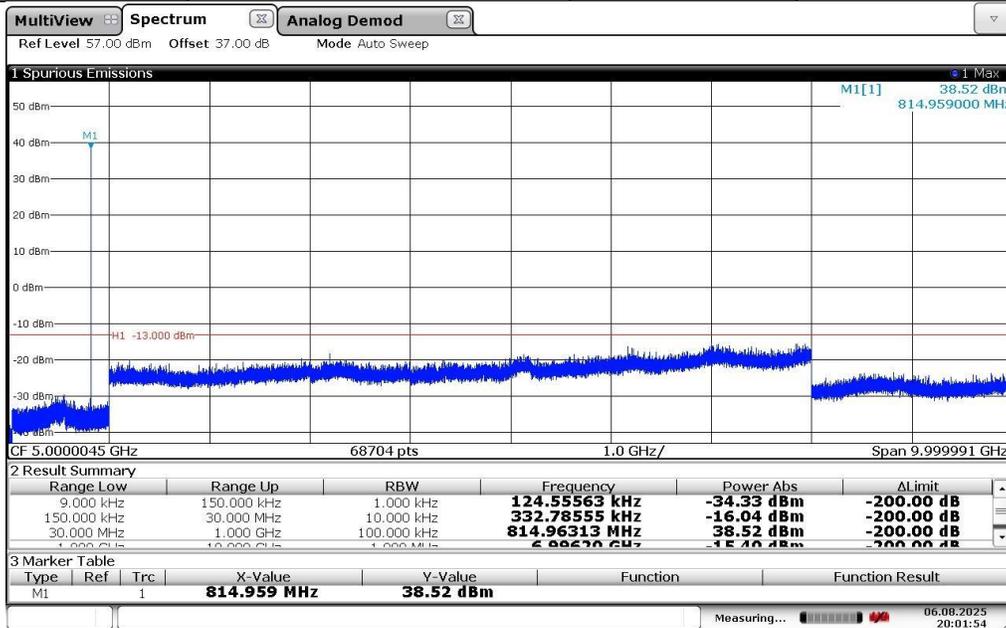
Low Power

Measurement Method	Conducted	Test Channel	809.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



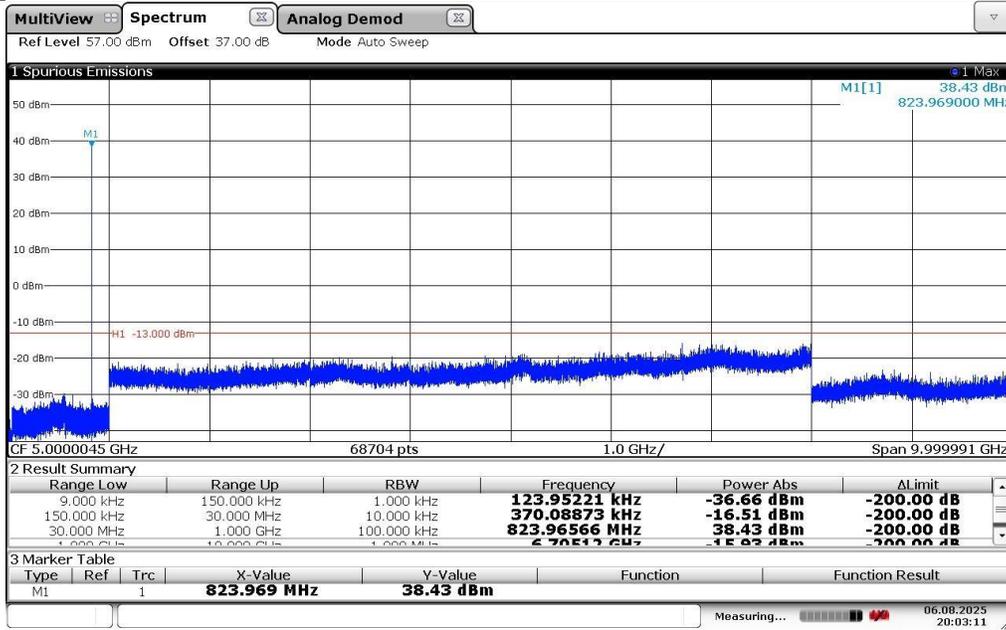
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Measurement Method	Conducted	Test Channel	814.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



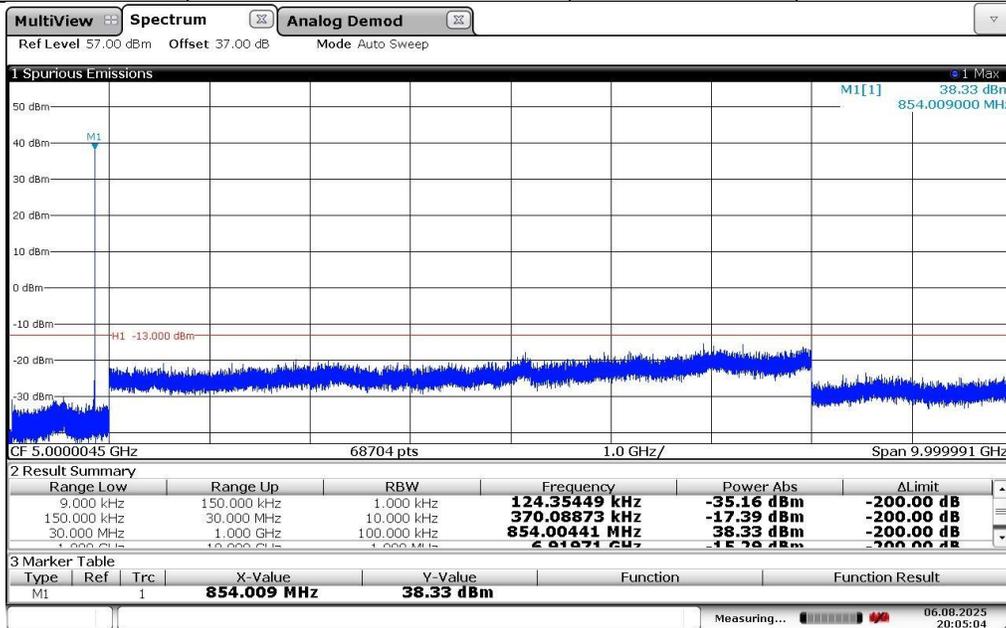
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Measurement Method	Conducted	Test Channel	823.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



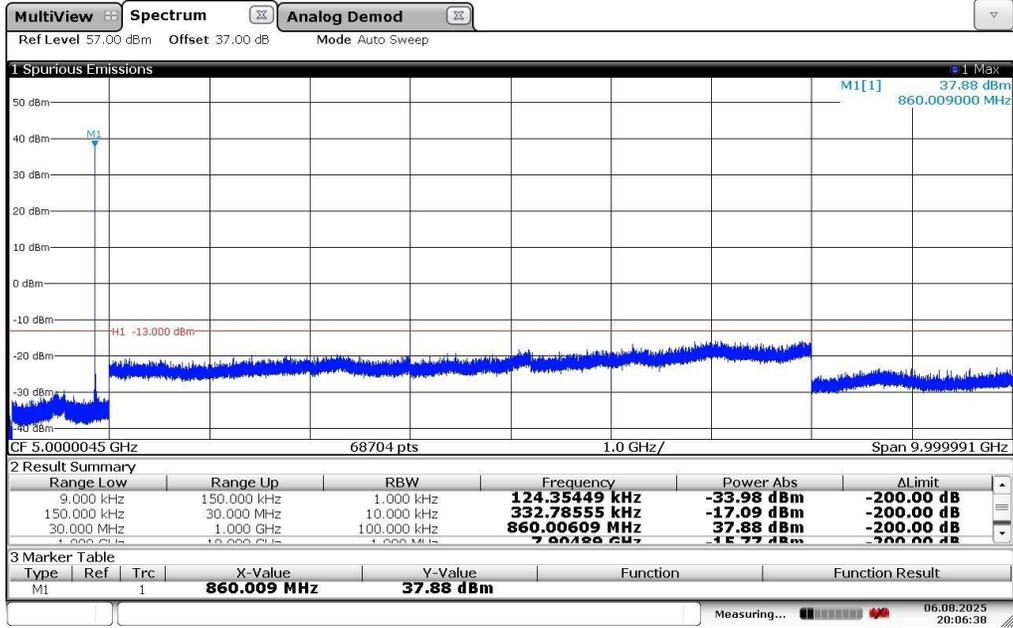
20:03:12 06.08.2025

Measurement Method	Conducted	Test Channel	854.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



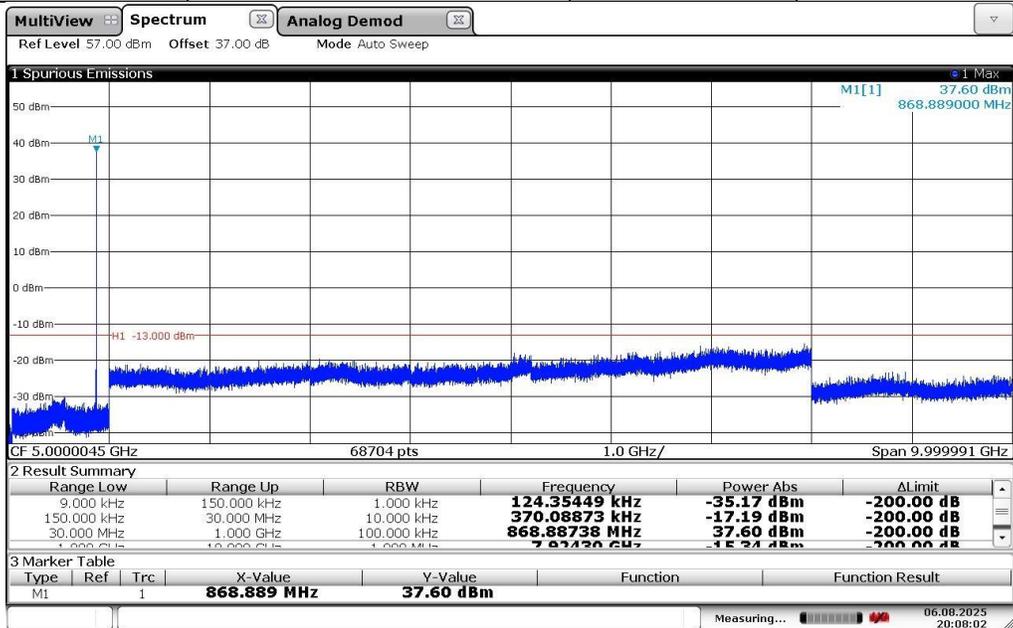
20:05:05 06.08.2025

Measurement Method	Conducted	Test Channel	860.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



20:06:38 06.08.2025

Measurement Method	Conducted	Test Channel	868.8875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



20:08:03 06.08.2025

6.3. TRANSMITTER RADIATED SPURIOUS EMISSION

LIMITS

EIRP (dBm) = E (dB μ V/m) + 20log(D) - 104.8; where D is the measurement distance (in the far field region) in m. when m = 3, EIRP (dBm) = E (dB μ V/m) – 95.2

For 25 kHz Channel Separation mode: 43 + 10 log (Pwatts)

Calculation: Limit (dBm) = EL-43-10log10 (TP)

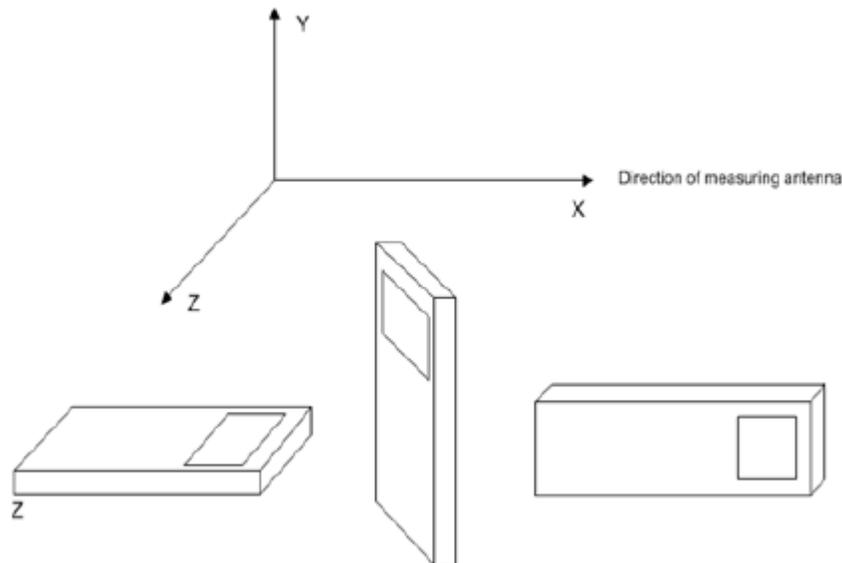
Notes: EL is the emission level of the Output Power expressed in dBm, In this application, the EL is P(dBm).

Limit (dBm) = P(dBm)-43-10 log (Pwatts) = -13 dBm

Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m

TEST PROCEDURE

- a. The measuring distance of at 3m shall be used for measurements at frequency up to 1 GHz.
- b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. EIRP (dBm) = E (dB μ V/m) + 20log(D) – 104.8; where D is the measurement distance (in the far field region) in m.
So, EIRP (dBm) = E (dB μ V/m) – 95.2
- e. EUT in each of three orthogonal axis emissions need to be tested.



EUT configuration positions

For below 1GHz and above 30MHz:

The setting of the spectrum analyzer

RBW	120 kHz
VBW	300 kHz
Sweep	Auto
Detector	Peak/QP
Trace	Max hold

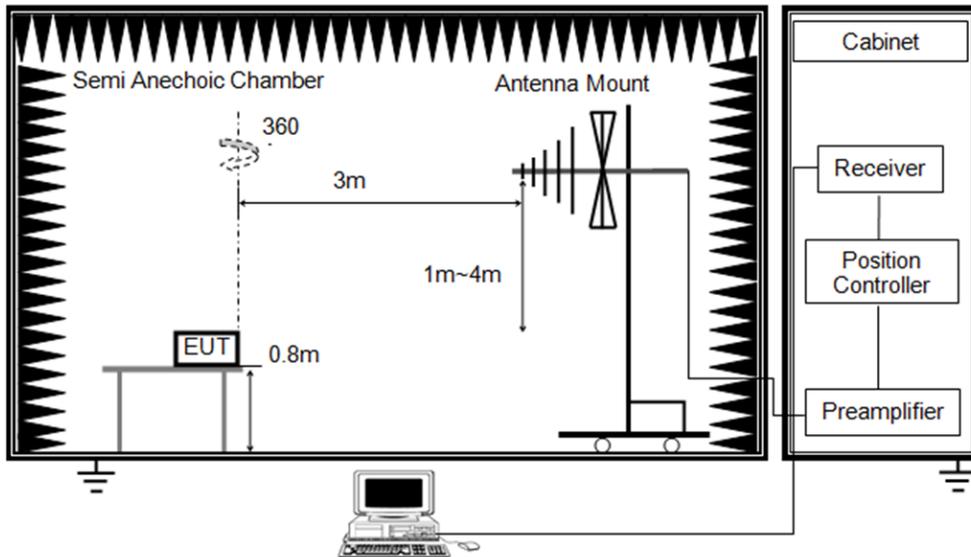
For above 1GHz:

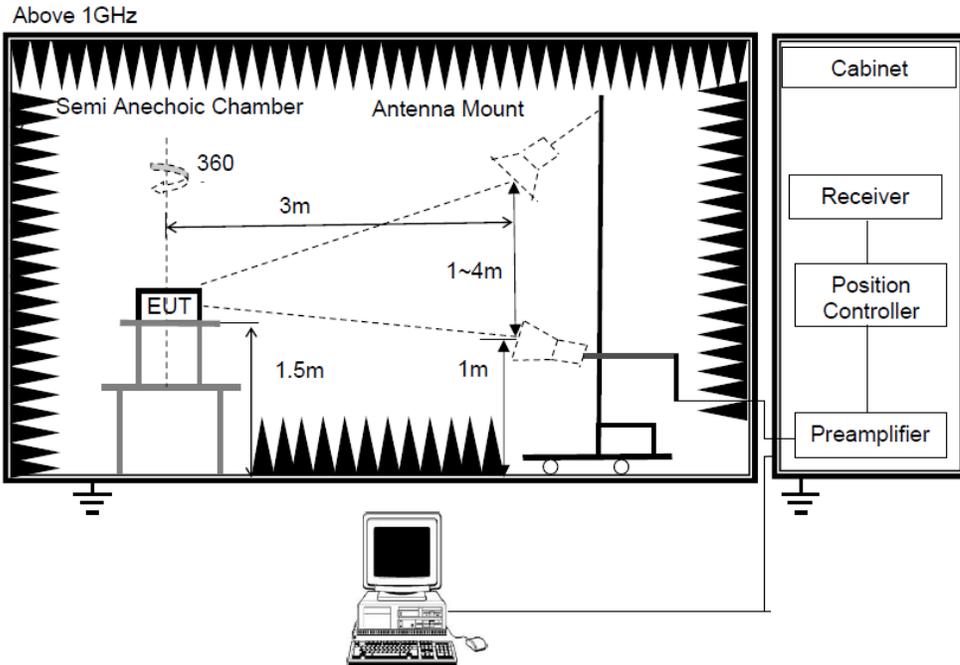
The setting of the spectrum analyzer

RBW	1 MHz
VBW	PEAK: 3 MHz
Sweep	Auto
Detector	Peak
Trace	Max hold

TEST SETUP

Below 1 GHz and above 30 MHz





TEST ENVIRONMENT

For below 1GHz

Temperature	23.5°C	Relative Humidity	51%
Atmosphere Pressure	101kPa		

For above 1GHz

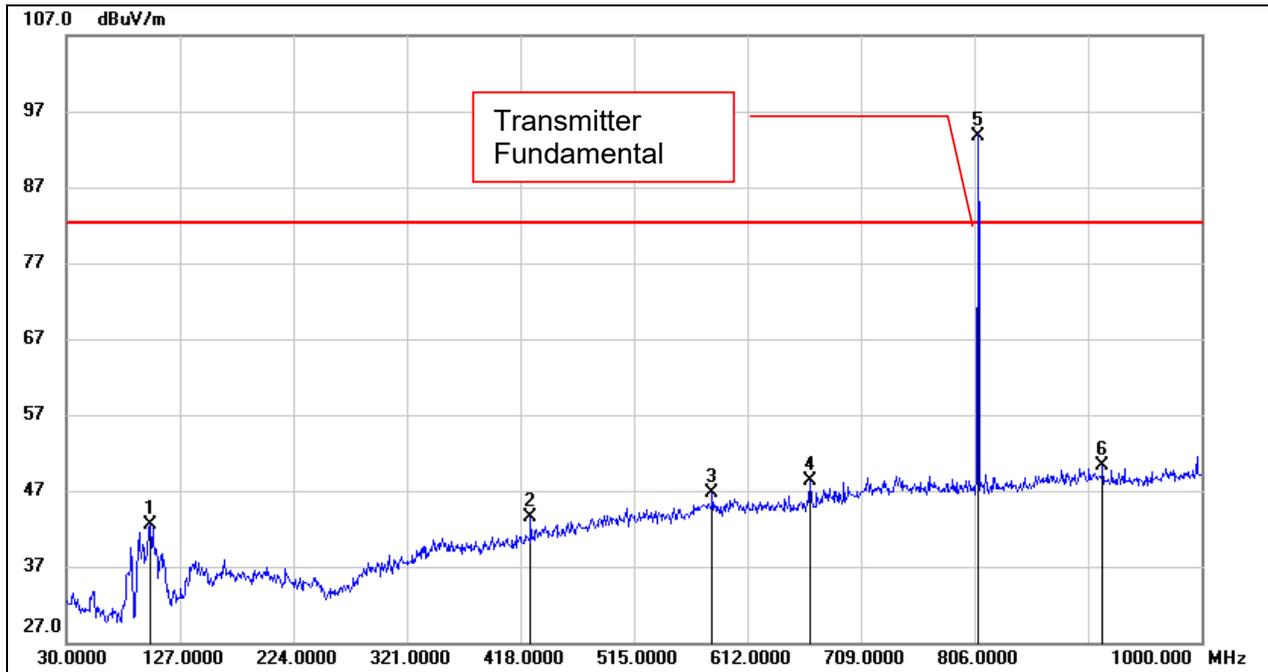
Temperature	24.1°C	Relative Humidity	50%
Atmosphere Pressure	101kPa		

RESULT – BELOW 1 GHz

For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (Y axis) data recorded in the report.

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

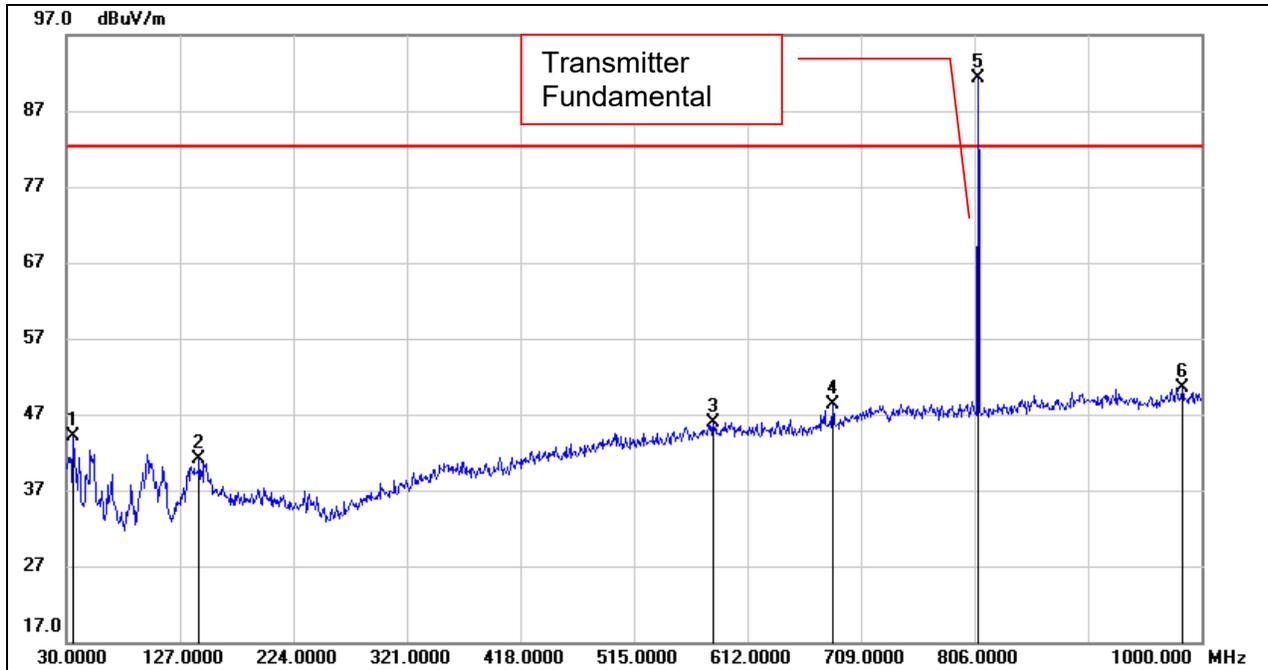
Measurement Method	Radiated	Test Channel	809.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	101.7800	12.66	29.81	42.47	82.20	-39.73	QP
2	426.7300	4.21	39.34	43.55	82.20	-38.65	QP
3	581.9300	4.31	42.39	46.70	82.20	-35.50	QP
4	665.3500	5.30	42.99	48.29	82.20	-33.91	QP
5	809.0125	/	/	/	/	/	fundamental
6	915.6100	3.62	46.72	50.34	82.20	-31.86	QP

- Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

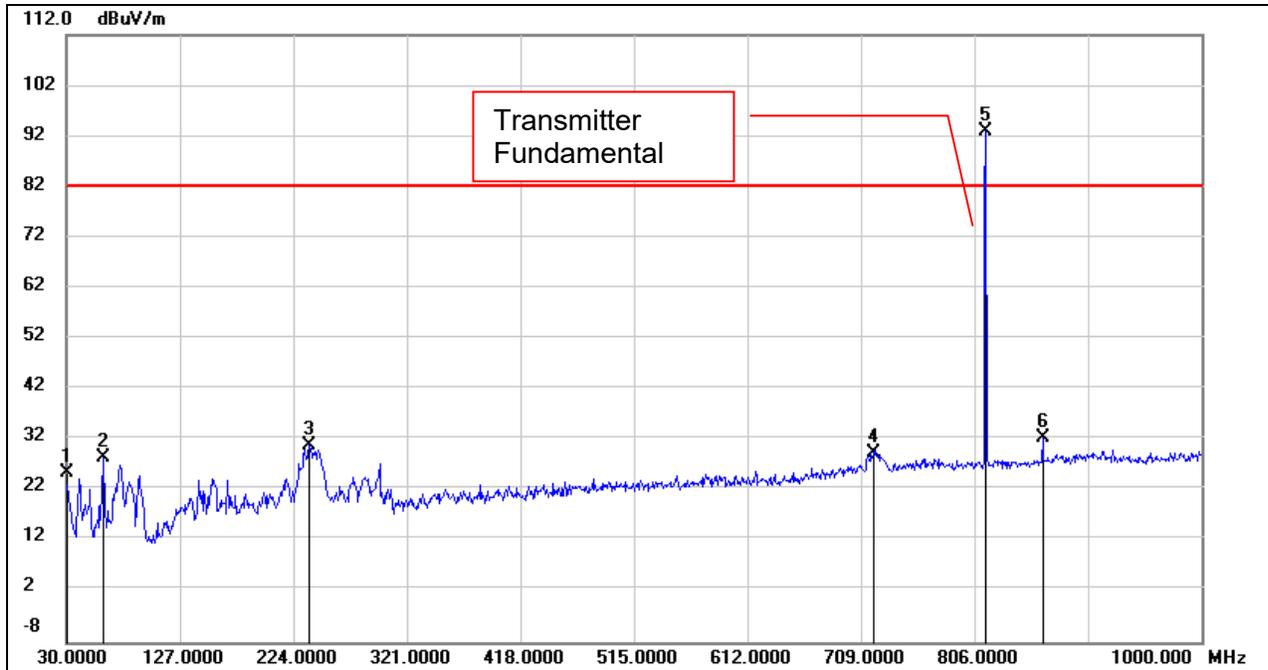
Measurement Method	Radiated	Test Channel	809.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	35.8200	12.66	31.43	44.09	82.20	-38.11	QP
2	143.4900	8.60	32.53	41.13	82.20	-41.07	QP
3	582.9000	3.57	42.42	45.99	82.20	-36.21	QP
4	684.7500	4.68	43.55	48.23	82.20	-33.97	QP
5	809.0125	/	/	/	/	/	fundamental
6	983.5100	3.55	47.00	50.55	82.20	-31.65	QP

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

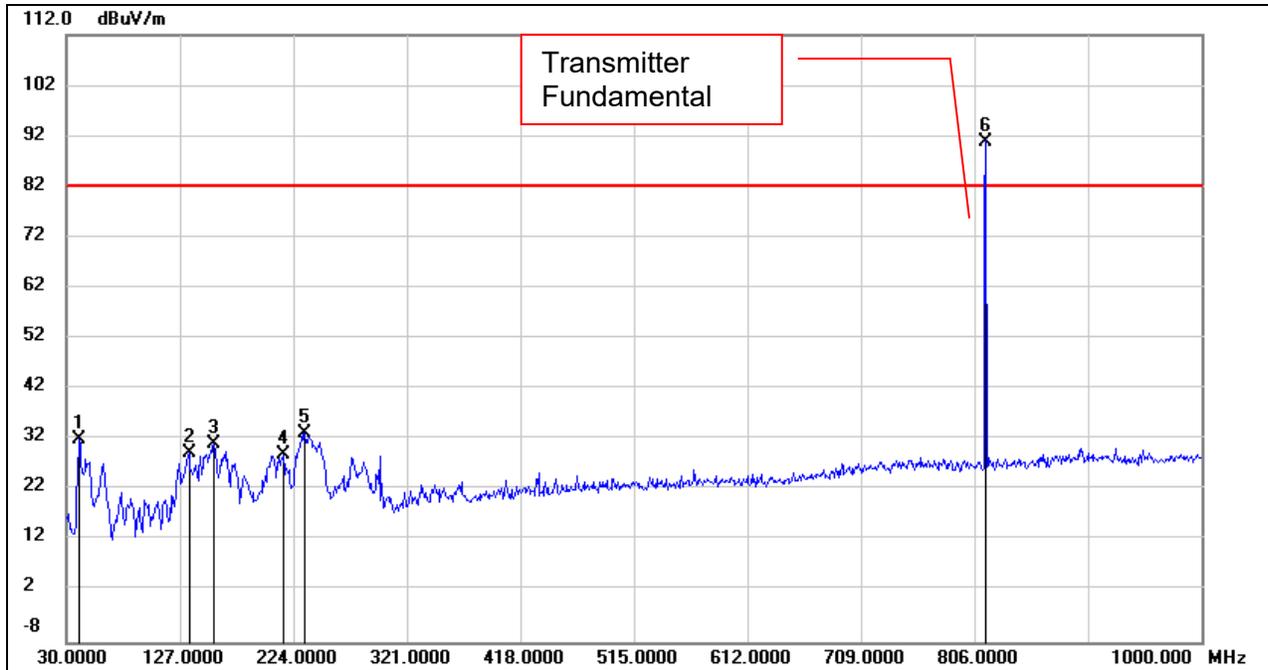
Measurement Method	Radiated	Test Channel	814.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	39.65	-14.06	25.59	82.20	-56.61	QP
2	62.0100	43.66	-15.31	28.35	82.20	-53.85	QP
3	237.5800	44.15	-13.15	31.00	82.20	-51.20	QP
4	719.6700	31.57	-2.24	29.33	82.20	-52.87	QP
5	814.9875	/	/	/	/	/	fundamental
6	864.2000	32.99	-0.70	32.29	82.20	-49.91	QP

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

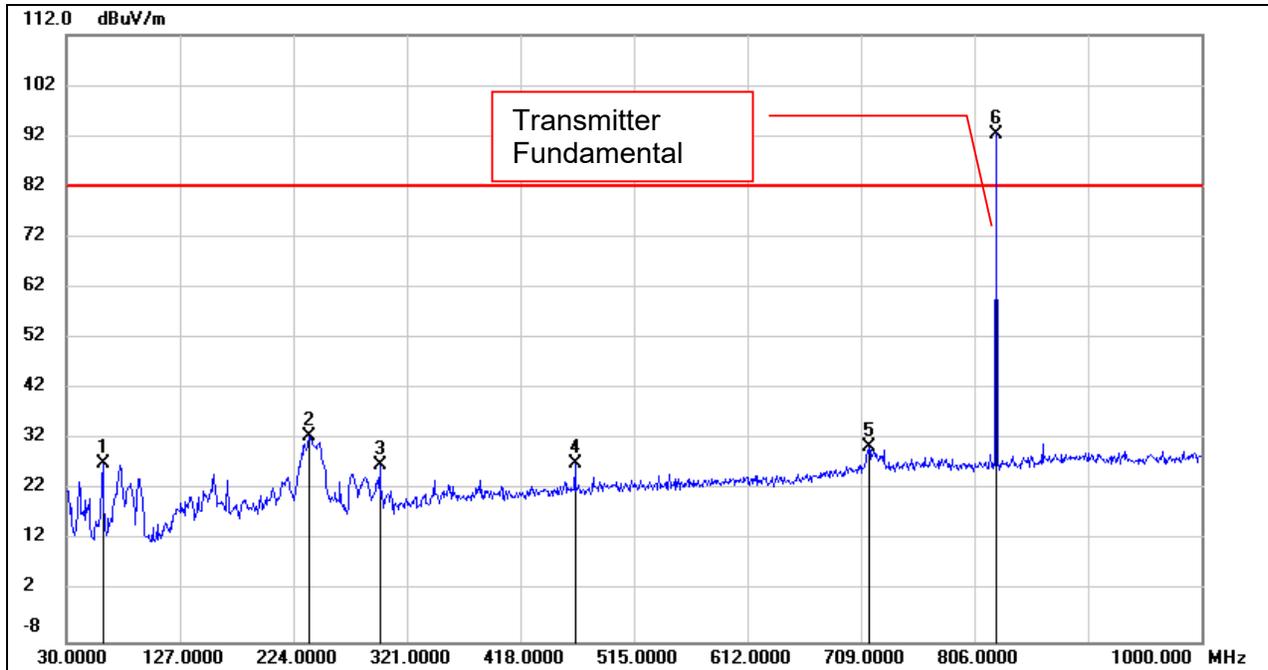
Measurement Method	Radiated	Test Channel	814.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	40.6699	46.37	-14.40	31.97	82.20	-50.23	QP
2	134.7600	43.19	-13.83	29.36	82.20	-52.84	QP
3	156.1000	43.51	-12.21	31.30	82.20	-50.90	QP
4	215.2700	40.90	-11.97	28.93	82.20	-53.27	QP
5	233.7000	46.28	-12.92	33.36	82.20	-48.84	QP
6	814.9875	/	/	/	/	/	fundamental

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

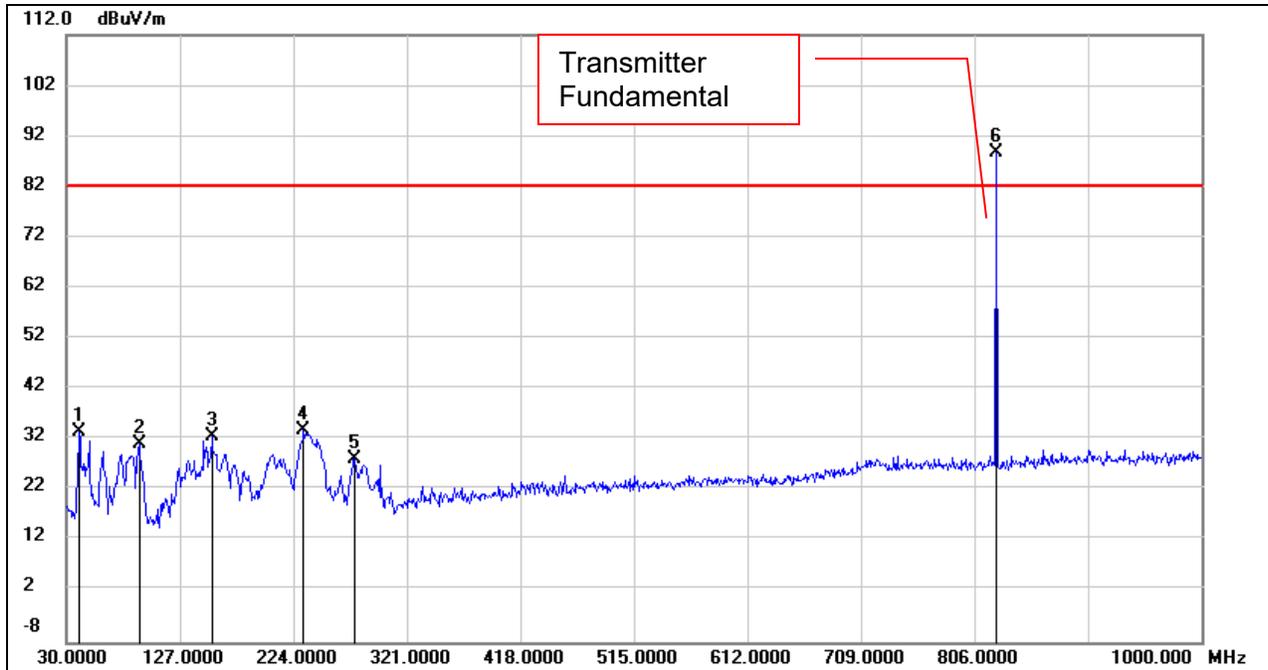
Measurement Method	Radiated	Test Channel	823.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	61.0400	42.54	-15.26	27.28	82.20	-54.92	QP
2	237.5800	45.78	-13.15	32.63	82.20	-49.57	QP
3	297.7200	37.66	-10.82	26.84	82.20	-55.36	QP
4	464.5600	34.24	-6.91	27.33	82.20	-54.87	QP
5	715.7900	32.81	-2.39	30.42	82.20	-51.78	QP
6	823.9875	/	/	/	/	/	fundamental

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

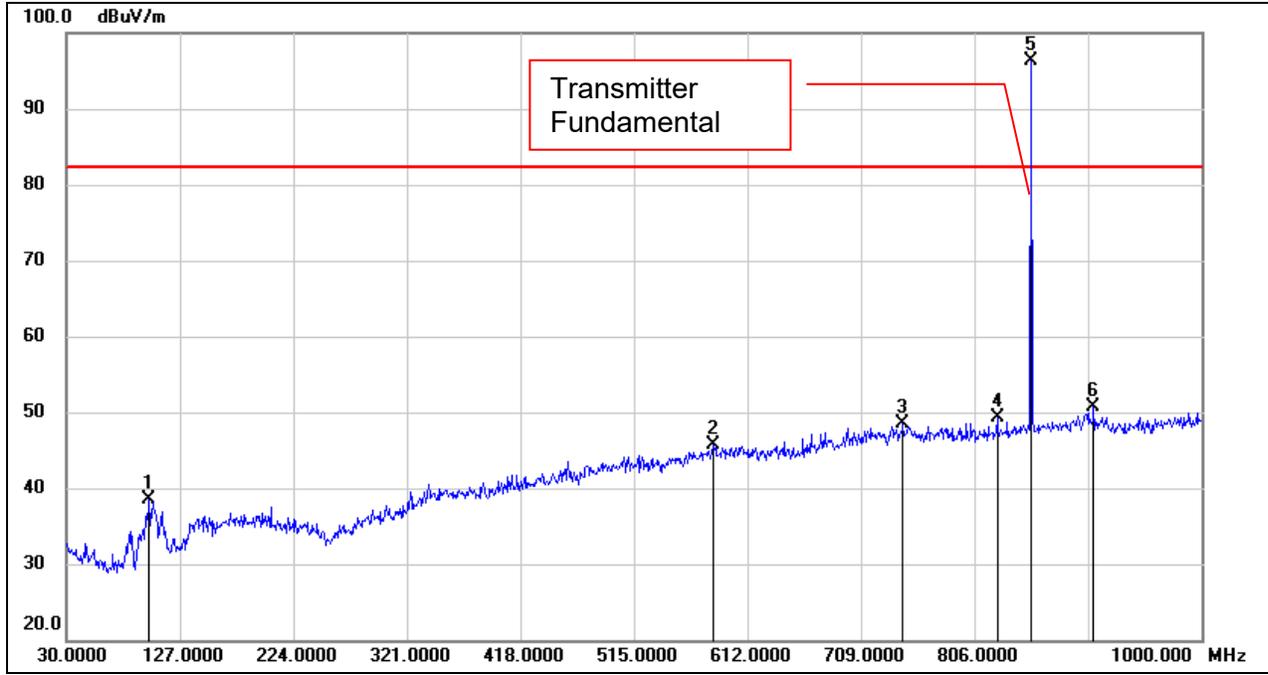
Measurement Method	Radiated	Test Channel	823.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	40.6699	47.89	-14.40	33.49	82.20	-48.71	QP
2	92.0800	47.11	-15.98	31.13	82.20	-51.07	QP
3	154.1600	44.95	-12.34	32.61	82.20	-49.59	QP
4	232.7300	46.59	-12.86	33.73	82.20	-48.47	QP
5	276.3800	40.36	-12.22	28.14	82.20	-54.06	QP
6	823.9875	/	/	/	/	/	fundamental

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

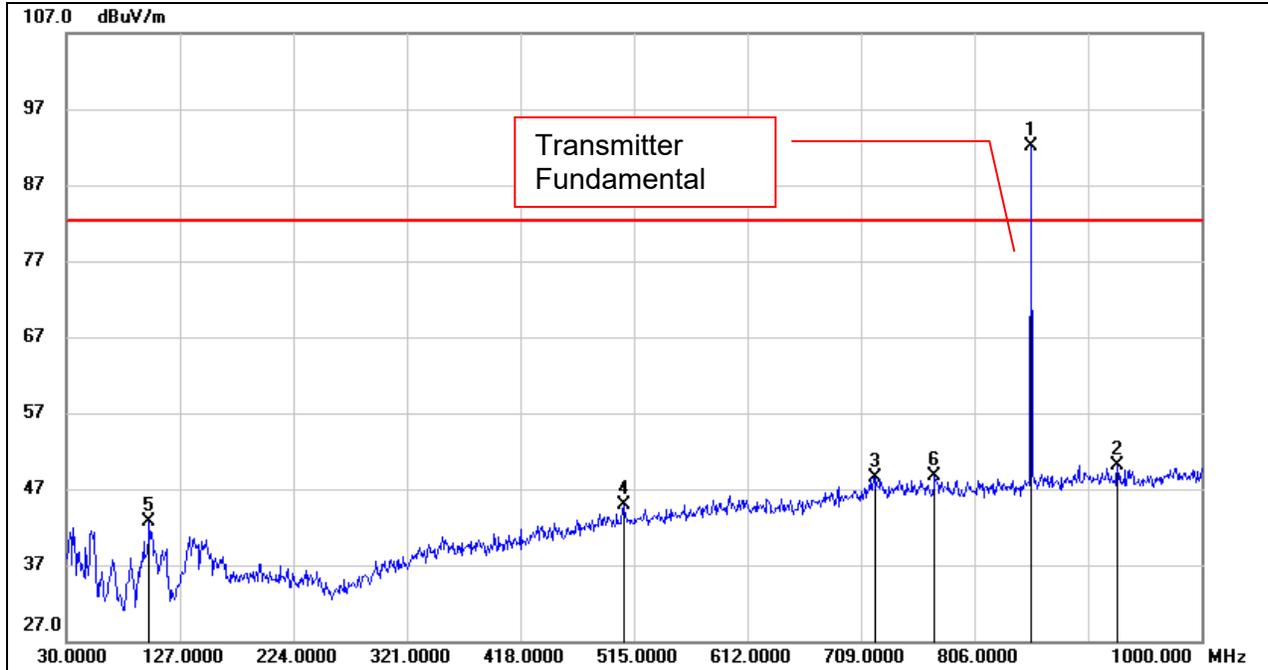
Measurement Method	Radiated	Test Channel	854.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	100.8100	8.71	29.72	38.43	82.20	-43.77	QP
2	582.9000	3.19	42.42	45.61	82.20	-36.59	QP
3	744.8900	2.93	45.64	48.57	82.20	-33.63	QP
4	825.4000	3.49	45.73	49.22	82.20	-32.98	QP
5	854.0125	/	/	/	/	/	fundamental
6	907.8500	3.73	46.99	50.72	82.20	-31.48	QP

Note: 1. Limit (dBuV/m) = $-13+95.2 = 82.2$ dBuV/m
 2. Margin = Limit – Result

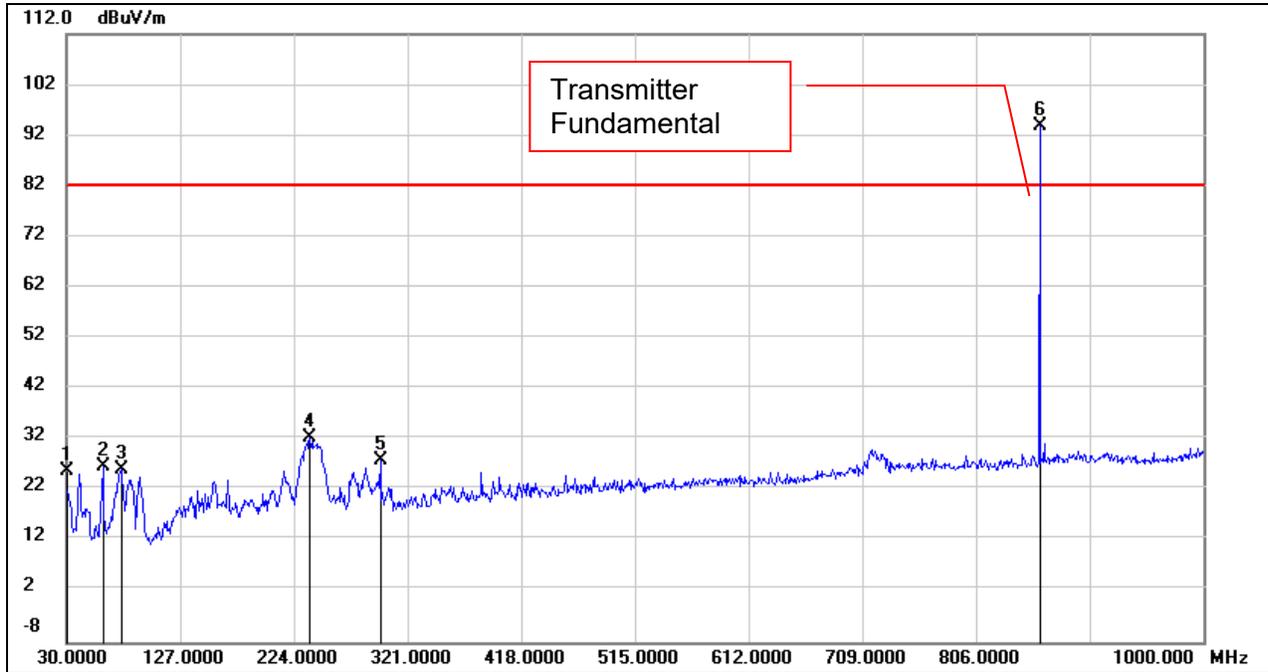
Measurement Method	Radiated	Test Channel	854.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	854.0125	/	/	/	/	/	fundamental
2	928.2200	3.50	46.58	50.08	82.20	-32.12	QP
3	721.6100	3.73	44.85	48.58	82.20	-33.62	QP
4	506.2700	3.50	41.31	44.81	82.20	-37.39	QP
5	100.8100	12.99	29.72	42.71	82.20	-39.49	QP
6	772.0500	2.97	45.67	48.64	82.20	-33.56	QP

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

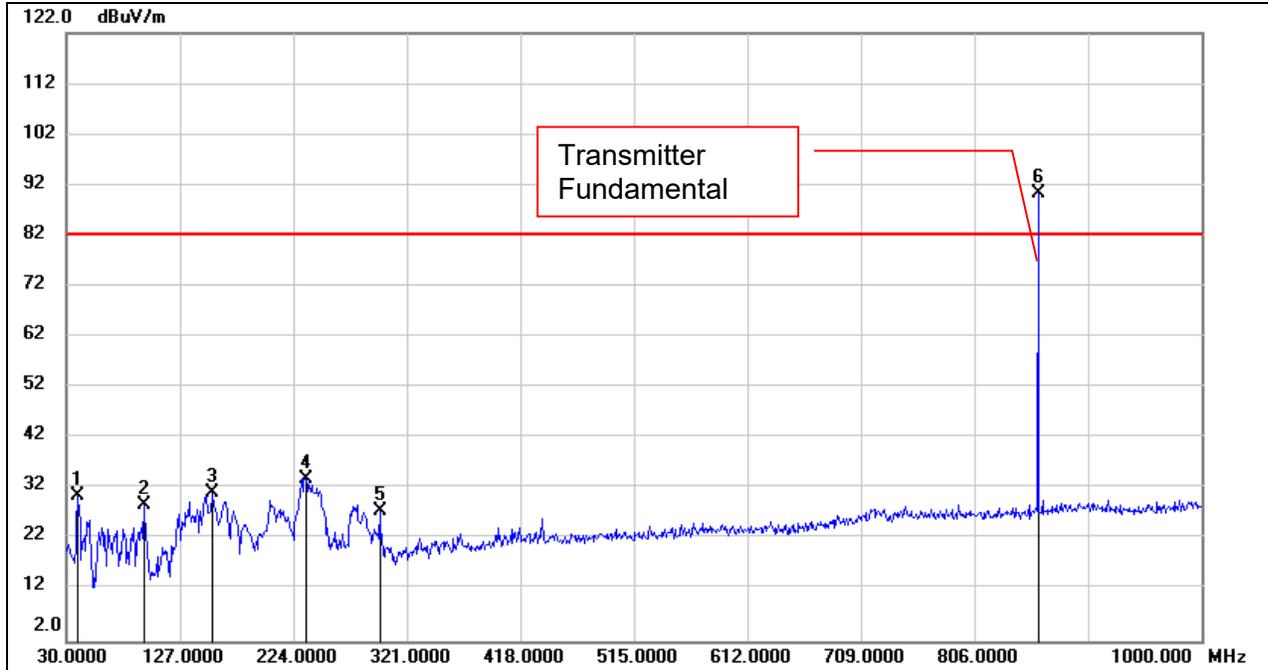
Measurement Method	Radiated	Test Channel	860.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.0000	39.93	-14.06	25.87	82.20	-56.33	QP
2	61.0400	41.89	-15.26	26.63	82.20	-55.57	QP
3	76.5600	41.89	-15.89	26.00	82.20	-56.20	QP
4	237.5800	45.35	-13.15	32.20	82.20	-50.00	QP
5	297.7200	38.64	-10.82	27.82	82.20	-54.38	QP
6	860.0125	/	/	/	/	/	fundamental

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

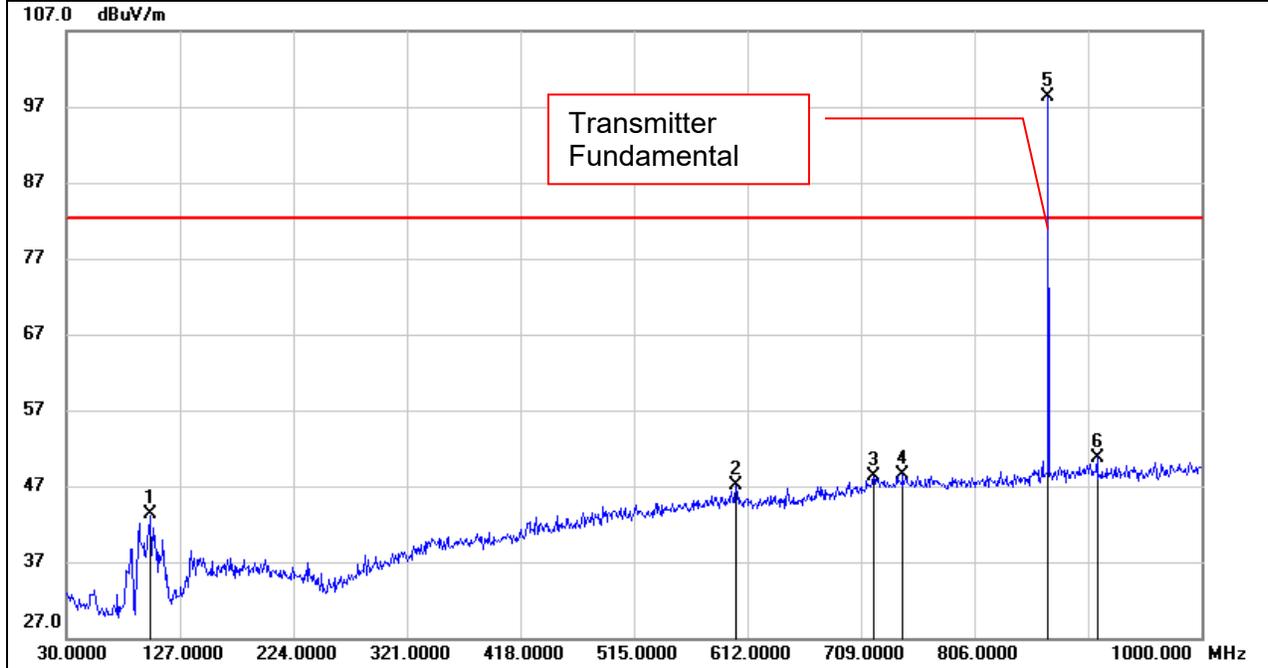
Measurement Method	Radiated	Test Channel	860.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	39.7000	44.94	-14.36	30.58	82.20	-51.62	QP
2	95.9600	44.66	-15.95	28.71	82.20	-53.49	QP
3	155.1300	43.53	-12.27	31.26	82.20	-50.94	QP
4	234.6700	46.97	-12.98	33.99	82.20	-48.21	QP
5	297.7200	38.39	-10.82	27.57	82.20	-54.63	QP
6	860.0125	/	/	/	/	/	fundamental

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

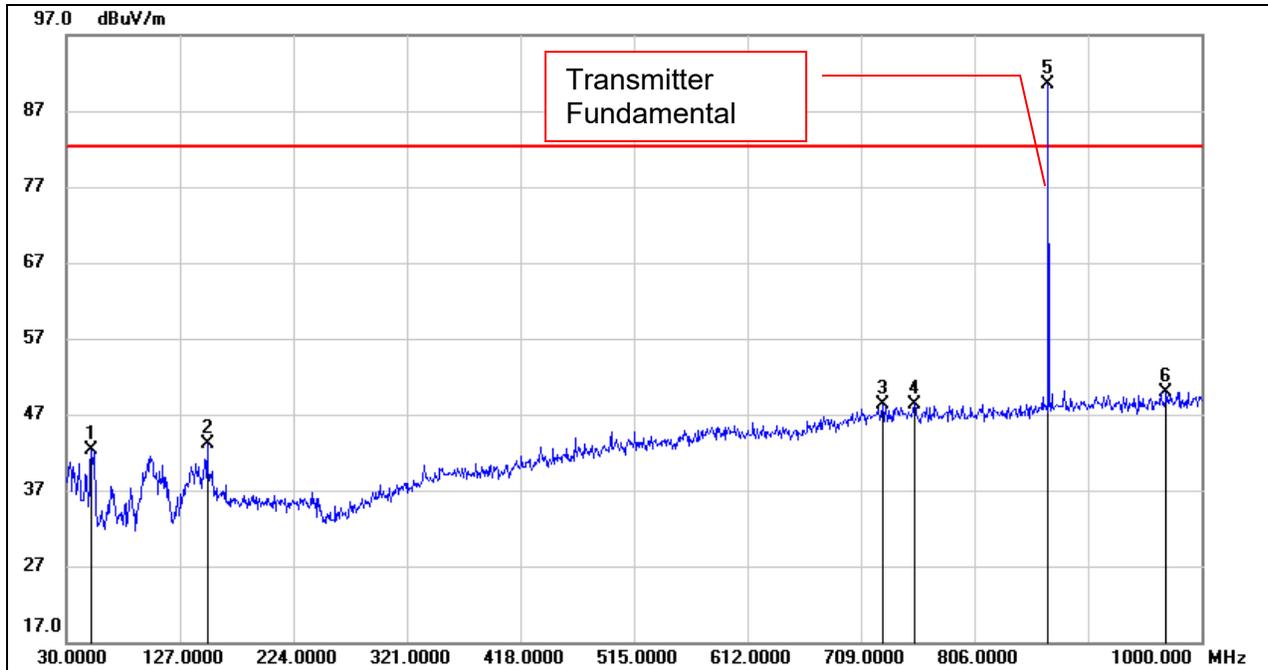
Measurement Method	Radiated	Test Channel	868.8875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	101.7800	13.39	29.81	43.20	82.20	-39.00	QP
2	602.3000	4.23	42.91	47.14	82.20	-35.06	QP
3	719.6700	3.54	44.82	48.36	82.20	-33.84	QP
4	744.8900	2.78	45.64	48.42	82.20	-33.78	QP
5	868.8875	/	/	/	/	/	fundamental
6	910.7600	3.89	46.91	50.80	82.20	-31.40	QP

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

Measurement Method	Radiated	Test Channel	868.8875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	51.3400	11.68	30.65	42.33	82.20	-39.87	QP
2	150.2800	9.92	33.15	43.07	82.20	-39.13	QP
3	727.4300	3.41	44.89	48.30	82.20	-33.90	QP
4	754.5900	2.78	45.62	48.40	82.20	-33.80	QP
5	868.8875	/	/	/	/	/	fundamental
6	969.9300	2.94	47.04	49.98	82.20	-32.22	QP

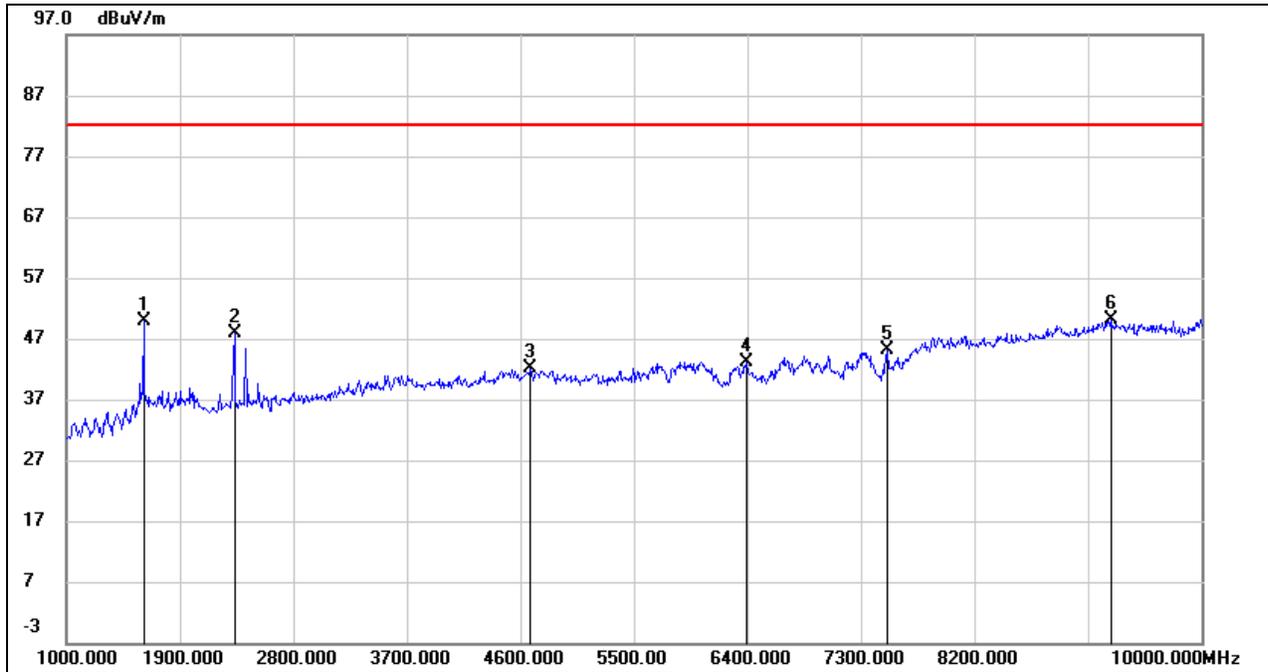
Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

Note: All the modes had been tested, but only the worst data recorded in the report.

RESULT – ABOVE 1 GHz

For all radiated test, EUT in each of three orthogonal axis emissions had been tested, but only the worst case (Y axis) data recorded in the report.

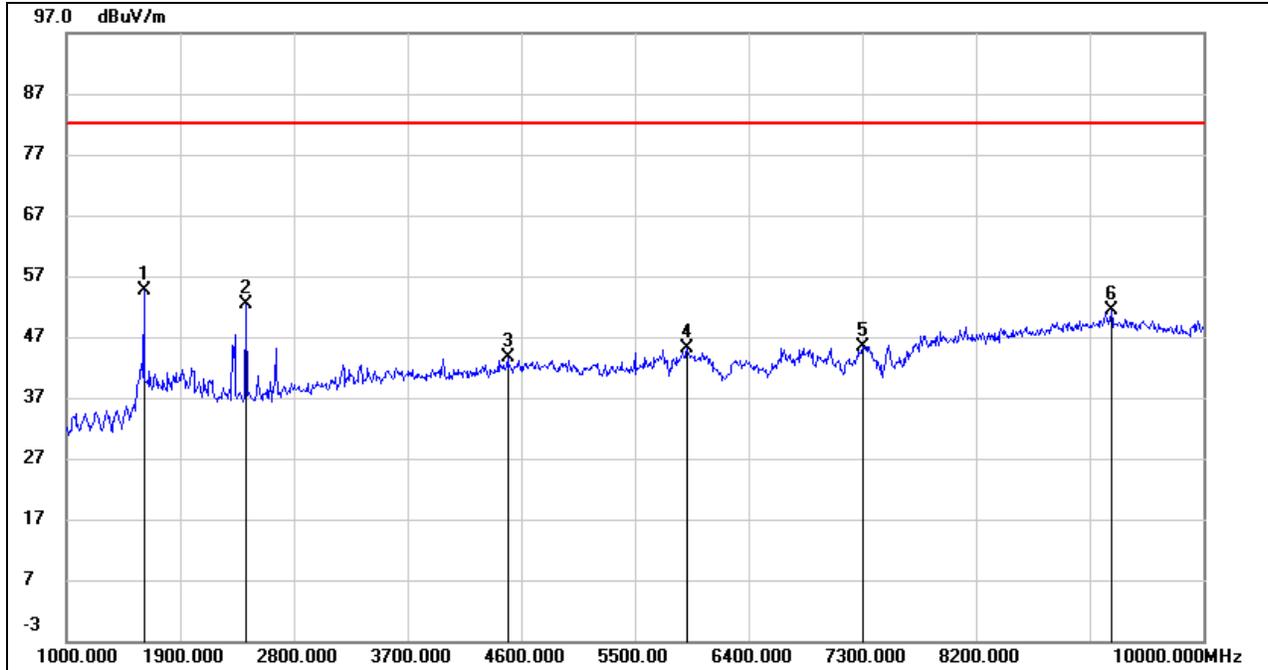
Measurement Method	Radiated	Test Channel	809.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1612.000	60.04	-10.26	49.78	82.20	-32.42	peak
2	2332.000	56.63	-8.77	47.86	82.20	-34.34	peak
3	4681.000	43.08	-1.03	42.05	82.20	-40.15	peak
4	6391.000	39.20	3.95	43.15	82.20	-39.05	peak
5	7507.000	38.16	7.03	45.19	82.20	-37.01	peak
6	9280.000	38.66	11.42	50.08	82.20	-32.12	peak

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

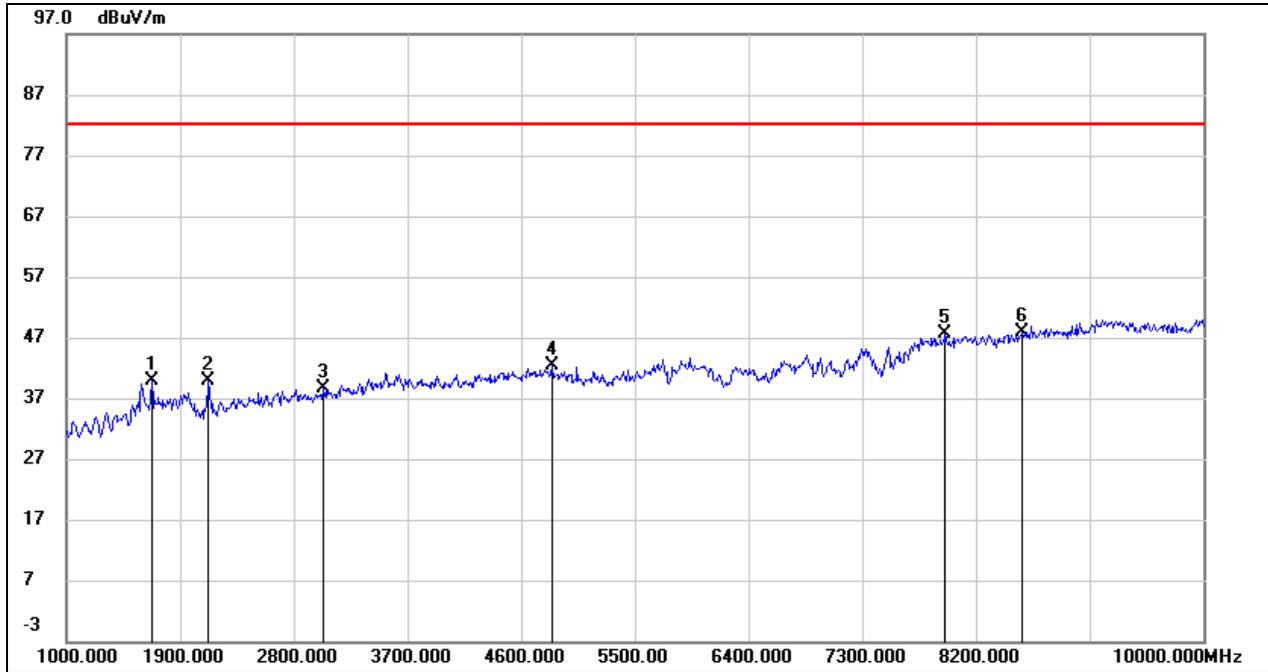
Measurement Method	Radiated	Test Channel	809.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1612.000	64.68	-9.98	54.70	82.20	-27.50	peak
2	2422.000	60.01	-7.58	52.43	82.20	-29.77	peak
3	4492.000	44.17	-0.57	43.60	82.20	-38.60	peak
4	5914.000	41.68	3.37	45.05	82.20	-37.15	peak
5	7300.000	37.86	7.49	45.35	82.20	-36.85	peak
6	9271.000	39.87	11.59	51.46	82.20	-30.74	peak

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

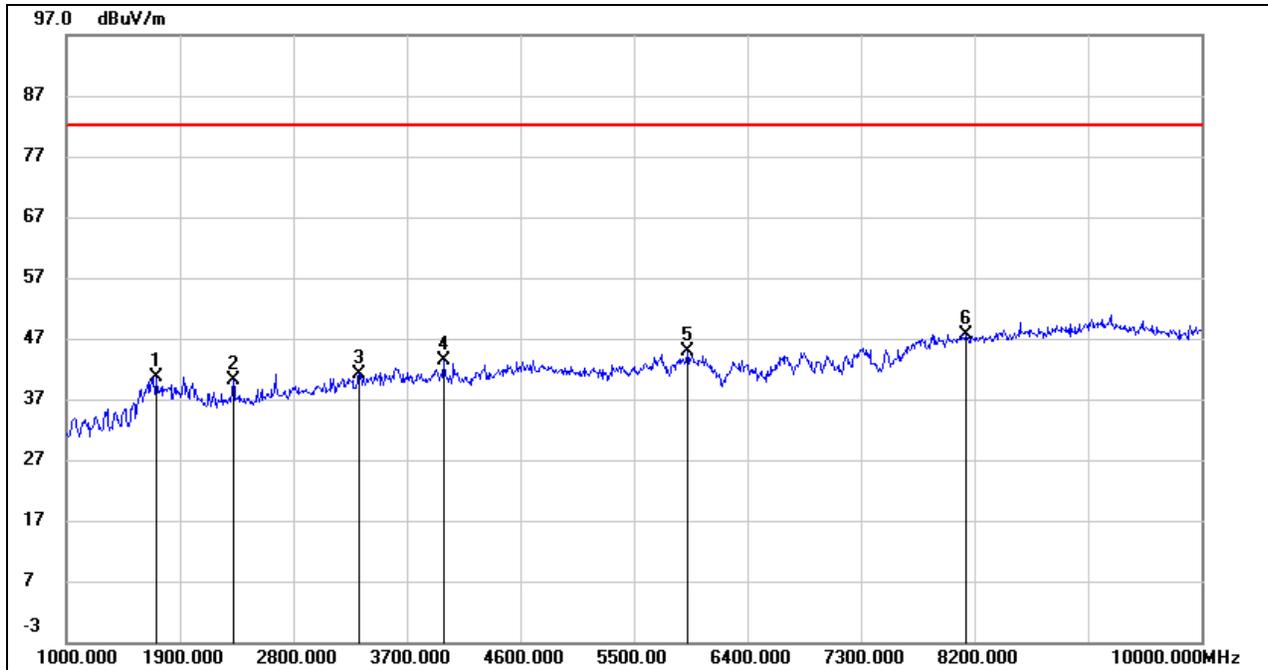
Measurement Method	Radiated	Test Channel	814.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1675.000	50.01	-10.01	40.00	82.20	-42.20	peak
2	2125.000	49.43	-9.56	39.87	82.20	-42.33	peak
3	3034.000	44.62	-5.92	38.70	82.20	-43.50	peak
4	4843.000	42.91	-0.63	42.28	82.20	-39.92	peak
5	7957.000	39.74	7.92	47.66	82.20	-34.54	peak
6	8569.000	38.84	9.07	47.91	82.20	-34.29	peak

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

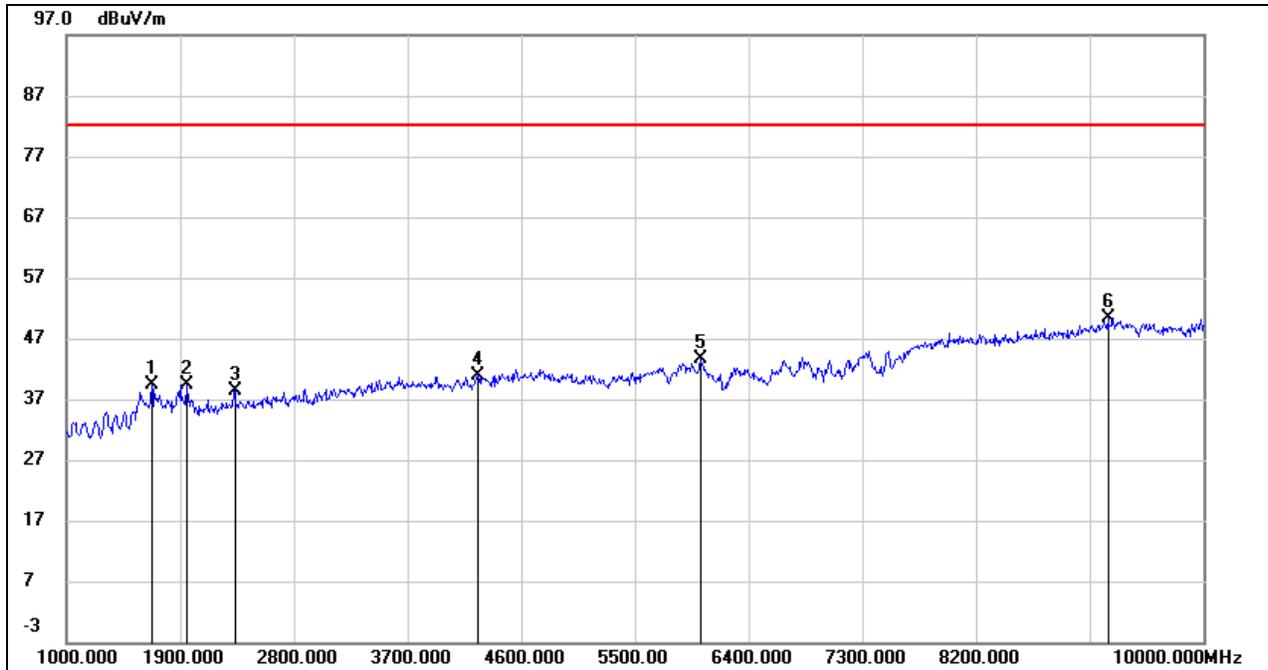
Measurement Method	Radiated	Test Channel	814.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1711.000	50.06	-9.45	40.61	82.20	-41.59	peak
2	2323.000	48.21	-7.97	40.24	82.20	-41.96	peak
3	3322.000	44.62	-3.37	41.25	82.20	-40.95	peak
4	3988.000	45.34	-1.84	43.50	82.20	-38.70	peak
5	5923.000	41.41	3.39	44.80	82.20	-37.40	peak
6	8137.000	39.02	8.67	47.69	82.20	-34.51	peak

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

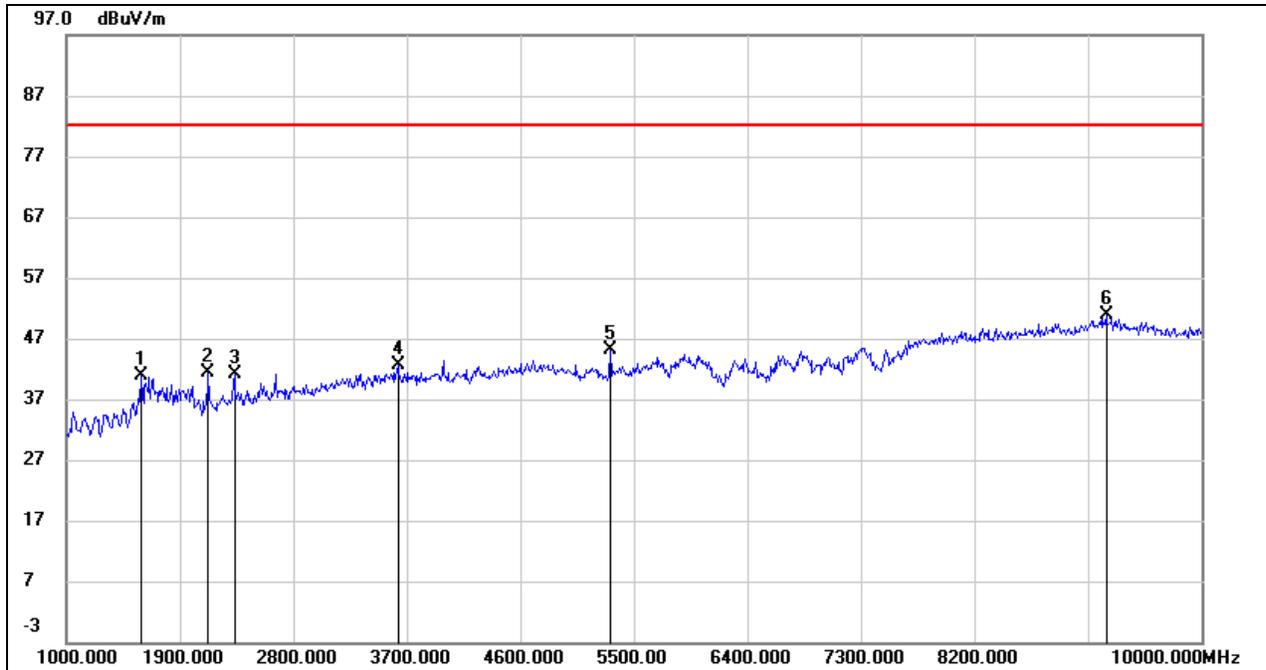
Measurement Method	Radiated	Test Channel	823.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1675.000	49.51	-10.01	39.50	82.20	-42.70	peak
2	1954.000	49.23	-9.82	39.41	82.20	-42.79	peak
3	2332.000	47.27	-8.77	38.50	82.20	-43.70	peak
4	4258.000	43.17	-2.17	41.00	82.20	-41.20	peak
5	6022.000	40.89	2.68	43.57	82.20	-38.63	peak
6	9244.000	39.00	11.35	50.35	82.20	-31.85	peak

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

Measurement Method	Radiated	Test Channel	823.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Vertical		

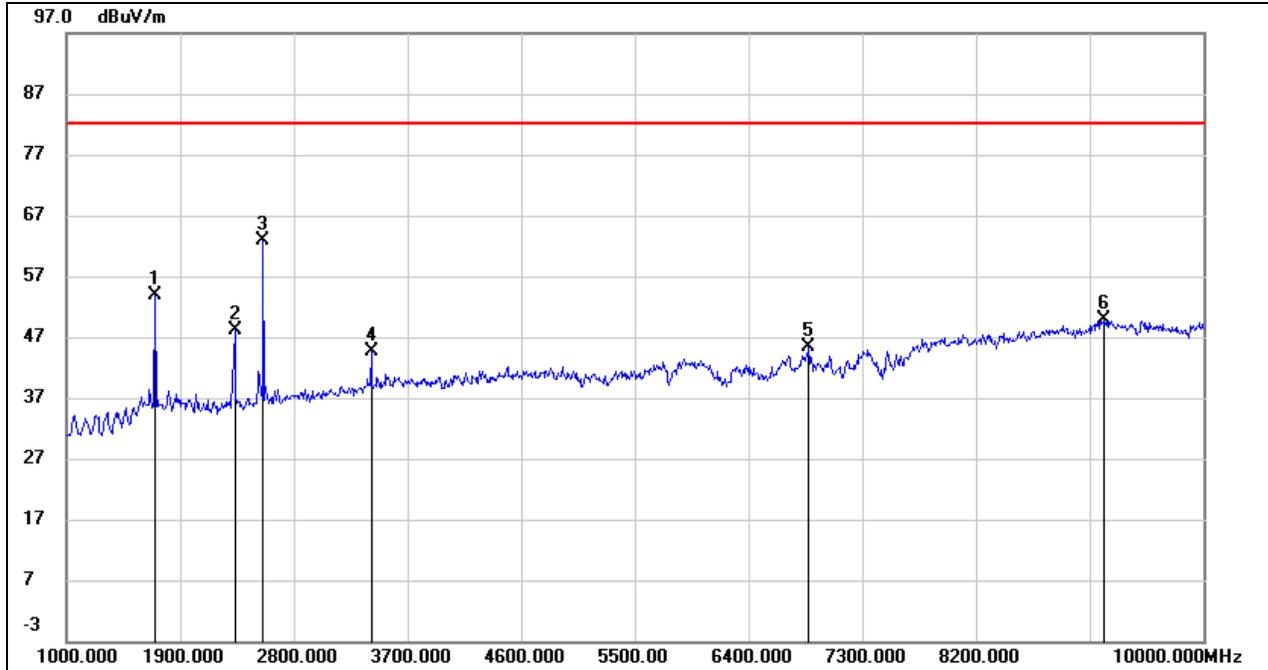


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1594.000	50.85	-10.09	40.76	82.20	-41.44	peak
2	2125.000	50.17	-8.69	41.48	82.20	-40.72	peak
3	2332.000	49.13	-7.93	41.20	82.20	-41.00	peak
4	3628.000	44.78	-2.26	42.52	82.20	-39.68	peak
5	5311.000	43.31	1.75	45.06	82.20	-37.14	peak
6	9244.000	39.24	11.56	50.80	82.20	-31.40	peak

Note: 1. Limit (dBuV/m) = $-13+95.2 = 82.2$ dBuV/m

2. Margin = Limit – Result

Measurement Method	Radiated	Test Channel	854.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Horizontal		

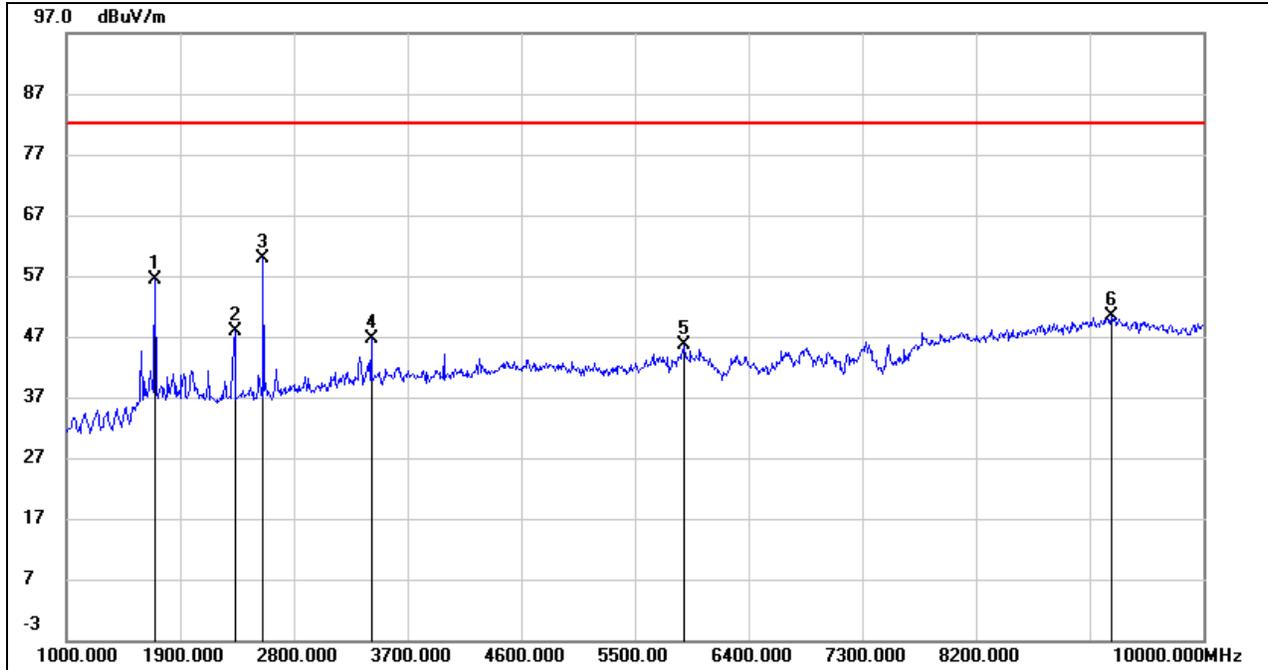


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1702.000	63.84	-9.92	53.92	82.20	-28.28	peak
2	2332.000	56.78	-8.77	48.01	82.20	-34.19	peak
3	2557.000	70.69	-7.93	62.76	82.20	-19.44	peak
4	3412.000	48.70	-4.06	44.64	82.20	-37.56	peak
5	6877.000	39.69	5.66	45.35	82.20	-36.85	peak
6	9217.000	38.50	11.30	49.80	82.20	-32.40	peak

Note: 1. Limit (dBuV/m) = $-13+95.2 = 82.2$ dBuV/m

2. Margin = Limit – Result

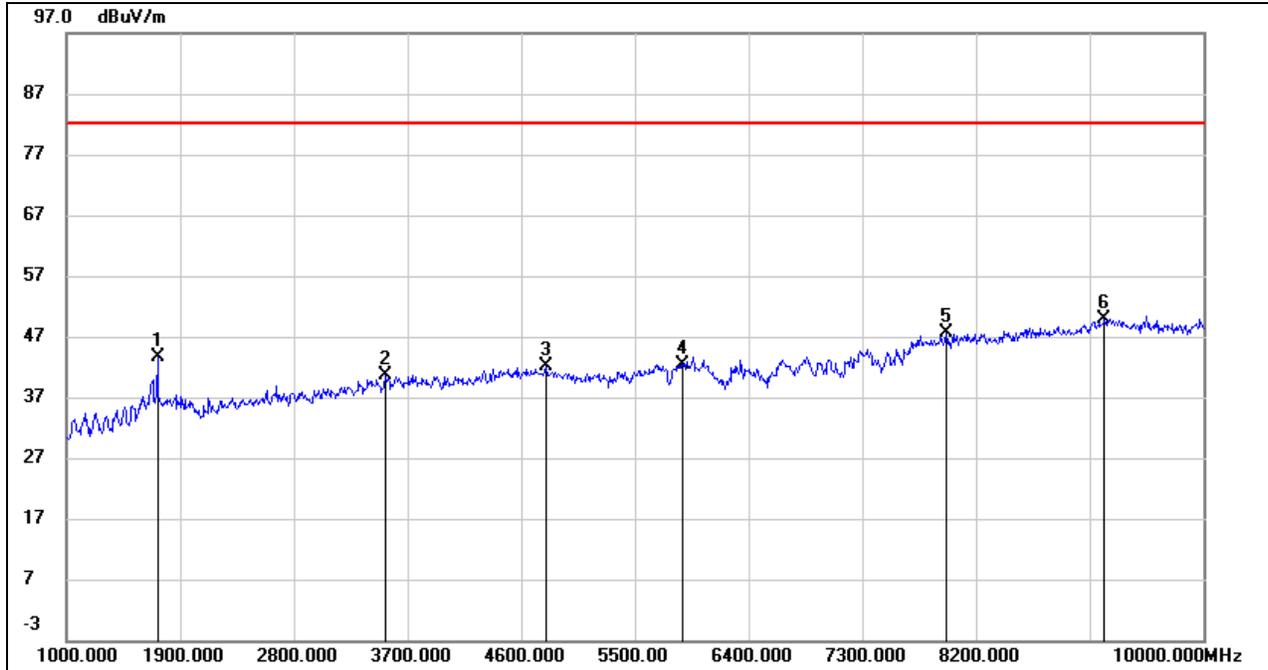
Measurement Method	Radiated	Test Channel	854.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1702.000	65.85	-9.49	56.36	82.20	-25.84	peak
2	2332.000	55.75	-7.93	47.82	82.20	-34.38	peak
3	2557.000	66.87	-7.07	59.80	82.20	-22.40	peak
4	3412.000	49.56	-3.01	46.55	82.20	-35.65	peak
5	5887.000	42.30	3.30	45.60	82.20	-36.60	peak
6	9271.000	38.77	11.59	50.36	82.20	-31.84	peak

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

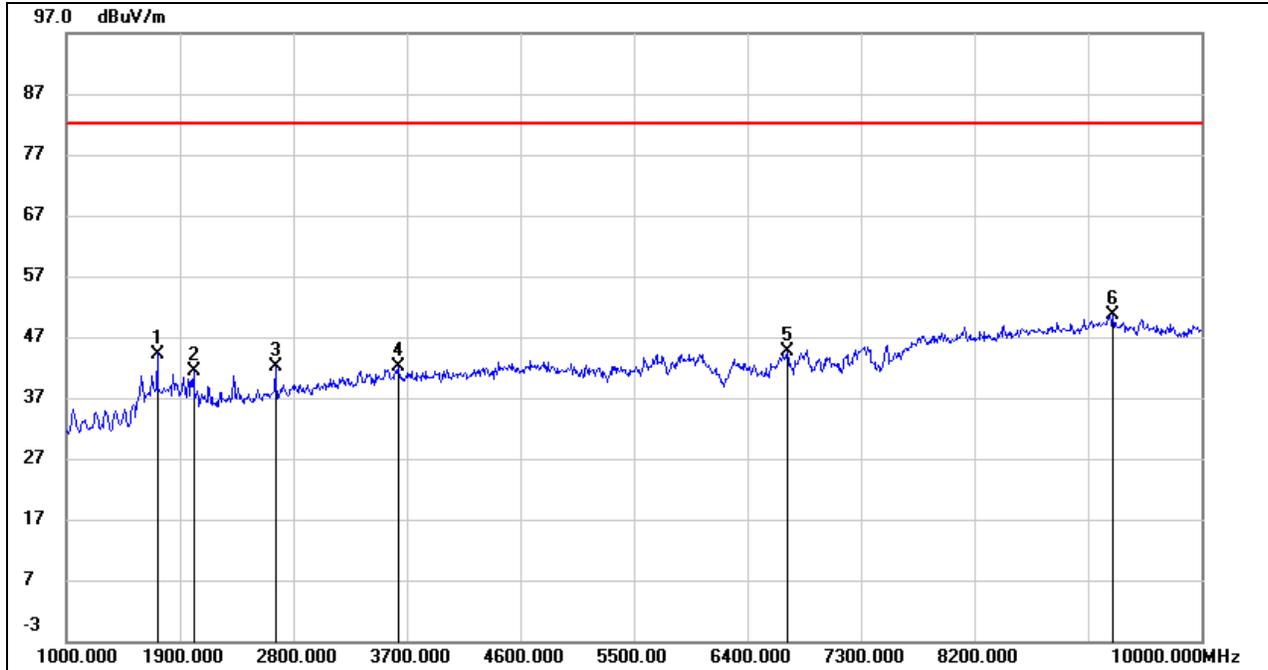
Measurement Method	Radiated	Test Channel	860.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1720.000	53.47	-9.86	43.61	82.20	-38.59	peak
2	3520.000	44.36	-3.62	40.74	82.20	-41.46	peak
3	4798.000	42.92	-0.75	42.17	82.20	-40.03	peak
4	5878.000	40.23	2.23	42.46	82.20	-39.74	peak
5	7966.000	39.74	7.96	47.70	82.20	-34.50	peak
6	9217.000	38.69	11.30	49.99	82.20	-32.21	peak

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

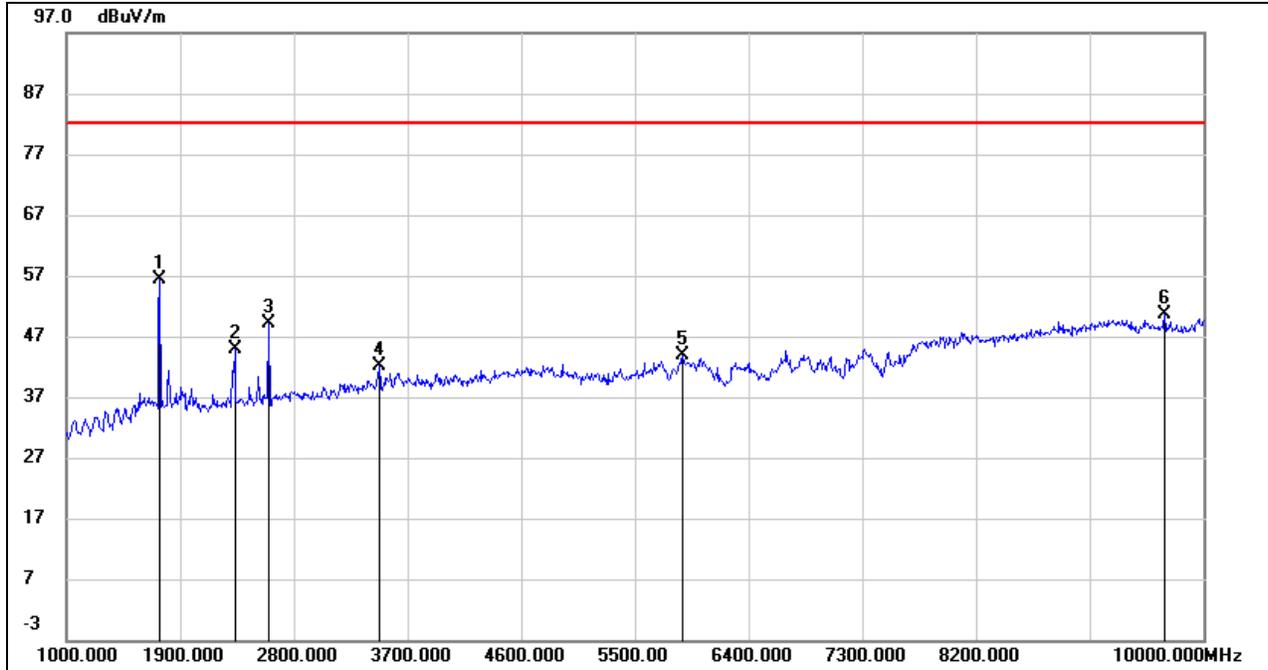
Measurement Method	Radiated	Test Channel	860.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1720.000	53.65	-9.40	44.25	82.20	-37.95	peak
2	2008.000	50.46	-8.99	41.47	82.20	-40.73	peak
3	2656.000	48.77	-6.58	42.19	82.20	-40.01	peak
4	3628.000	44.47	-2.26	42.21	82.20	-39.99	peak
5	6715.000	38.83	5.87	44.70	82.20	-37.50	peak
6	9298.000	39.02	11.63	50.65	82.20	-31.55	peak

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

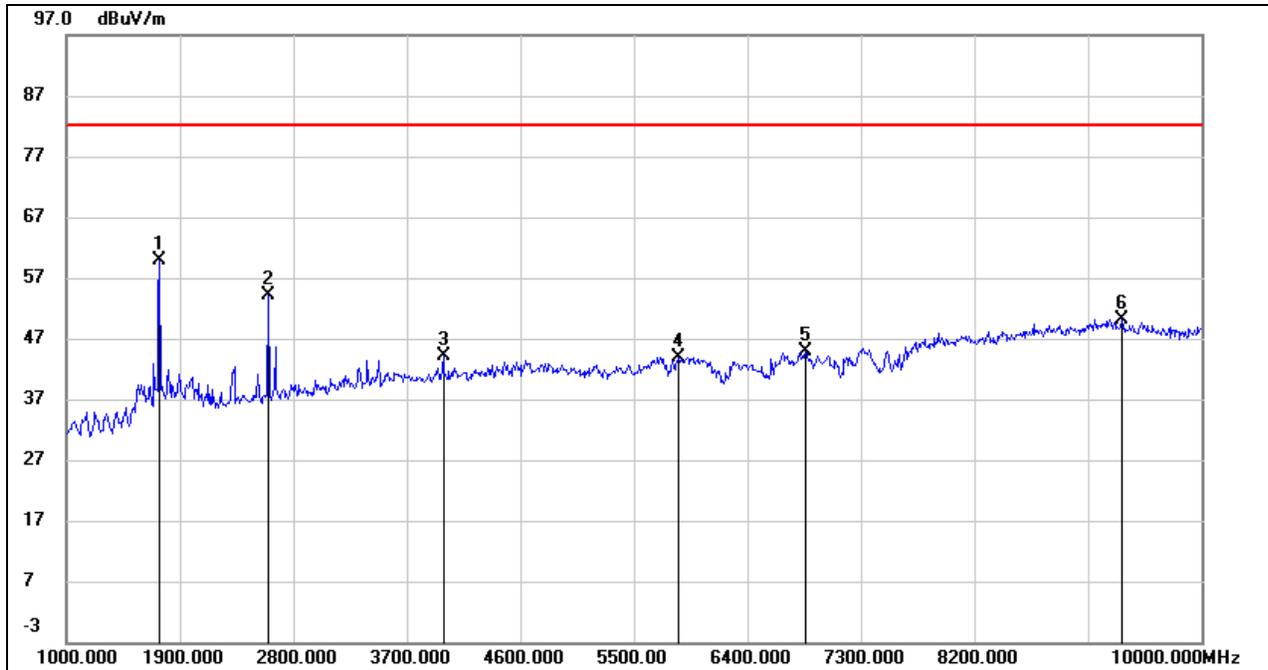
Measurement Method	Radiated	Test Channel	868.8875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK
Polar	Horizontal		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1738.000	66.22	-9.78	56.44	82.20	-25.76	peak
2	2332.000	53.57	-8.77	44.80	82.20	-37.40	peak
3	2602.000	57.00	-7.76	49.24	82.20	-32.96	peak
4	3475.000	45.96	-3.82	42.14	82.20	-40.06	peak
5	5878.000	41.59	2.23	43.82	82.20	-38.38	peak
6	9694.000	38.27	12.30	50.57	82.20	-31.63	peak

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

Measurement Method	Radiated	Test Channel	868.8875 MHz
Channel Separation	12.5 kHz	Modulation	pi/4 DQPSK
Polar	Vertical		



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1738.000	69.20	-9.30	59.90	82.20	-22.30	peak
2	2602.000	61.10	-6.86	54.24	82.20	-27.96	peak
3	3988.000	46.09	-1.84	44.25	82.20	-37.95	peak
4	5851.000	40.73	3.21	43.94	82.20	-38.26	peak
5	6859.000	38.34	6.47	44.81	82.20	-37.39	peak
6	9370.000	38.53	11.72	50.25	82.20	-31.95	peak

Note: 1. Limit (dBuV/m) = -13+95.2 = 82.2 dBuV/m
2. Margin = Limit – Result

6.4. EMISSION BANDWIDTH

LIMITS

Unless specified elsewhere, channel spacings and bandwidths that will be authorized in the following frequency bands are given in the following table.

Standard Channel Spacing/Bandwidth

Frequency band (MHz)	Channel spacing (kHz)	Authorized bandwidth (kHz)
806-809/851-854	12.5	20
809-817/854-862	12.5	⁶ 20/11.25
817-824/862-869	25	⁶ 20

⁶ Operations using equipment designed to operate with a 25 kilohertz channel bandwidth may be authorized up to a 20 kilohertz bandwidth unless the equipment meets the Adjacent Channel Power limits of § 90.221 in which case operations may be authorized up to a 22 kilohertz bandwidth. Operations using equipment designed to operate with a 12.5 kilohertz channel bandwidth may be authorized up to an 11.25 kilohertz bandwidth.

TEST PROCEDURE

- 1) The DUT transmitter output port was connected to RF Communications Test Set.
- 2) Path loss for the measurement included.
- 3) Spectrum set as follow:
Centre frequency = fundamental frequency, span=250 kHz, RBW=300 Hz, VBW=1 kHz, Sweep = auto, Detector function = RMS, Trace = max hold
- 4) Use the 99 % occupied bandwidth and ndB bandwidth function to test the bandwidth.
- 5) Measure and record the results in the test report.

TEST SETUP



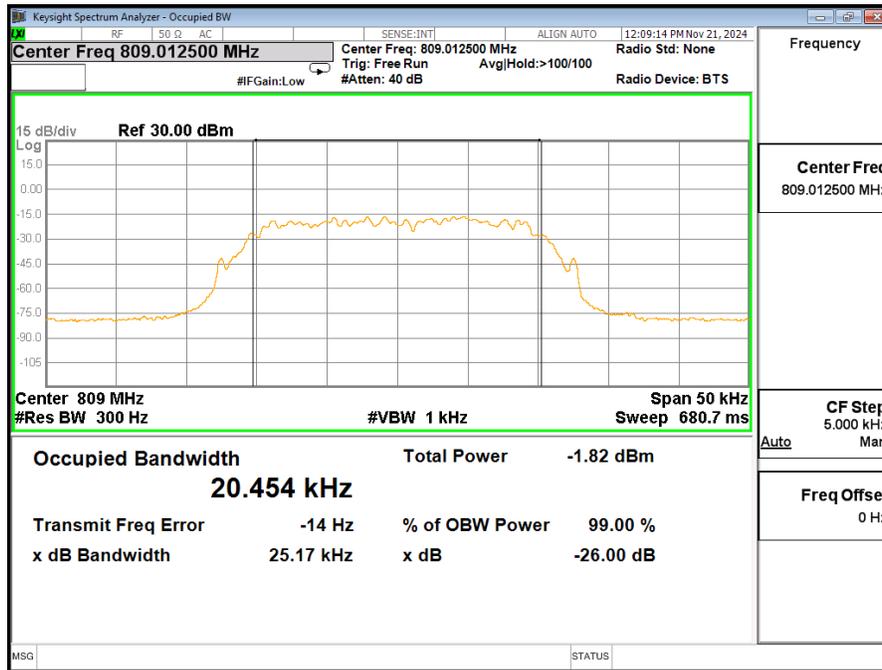
TEST ENVIRONMENT

Temperature	24.2 °C	Relative Humidity	53 %
Atmosphere Pressure	101 kPa	Test Voltage	DC 13.2 V

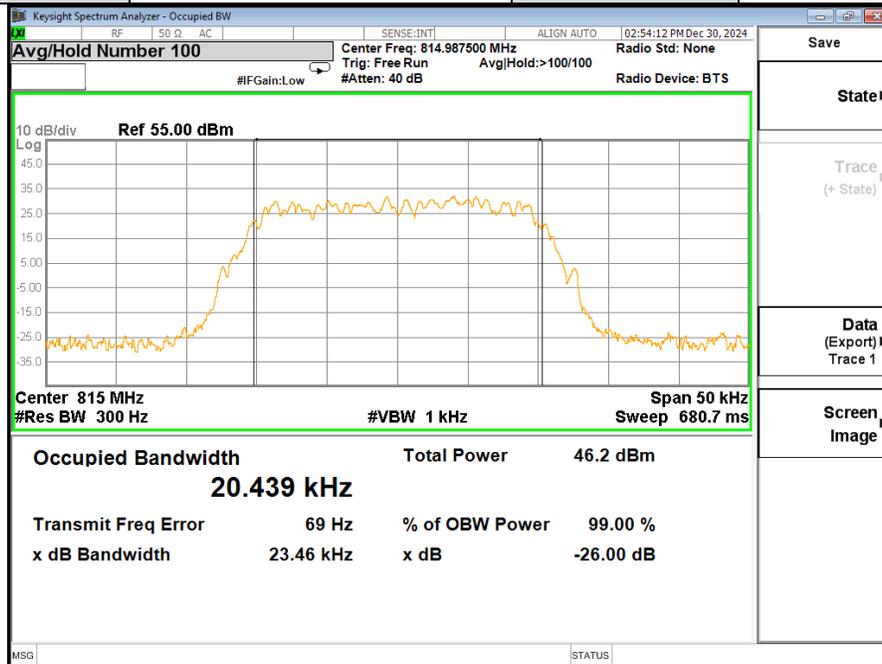
RESULTS

Frequency (MHz)	Channel Spacing (kHz)	Modulation Type	99 % Occupied Bandwidth (kHz)	Emission Designator	26 dB Bandwidth (kHz)
809.0125	25	pi/4 DQPSK	20.454	22K0D1D, 22K0D1E, 22K0D1W	25.17
814.9875	25	pi/4 DQPSK	20.439	22K0D1D, 22K0D1E, 22K0D1W	23.46
823.9875	25	pi/4 DQPSK	20.450	22K0D1D, 22K0D1E, 22K0D1W	23.46
854.0125	25	pi/4 DQPSK	20.476	22K0D1D, 22K0D1E, 22K0D1W	25.07
860.0125	25	pi/4 DQPSK	20.438	22K0D1D, 22K0D1E, 22K0D1W	23.39
868.8875	25	pi/4 DQPSK	20.426	22K0D1D, 22K0D1E, 22K0D1W	23.36

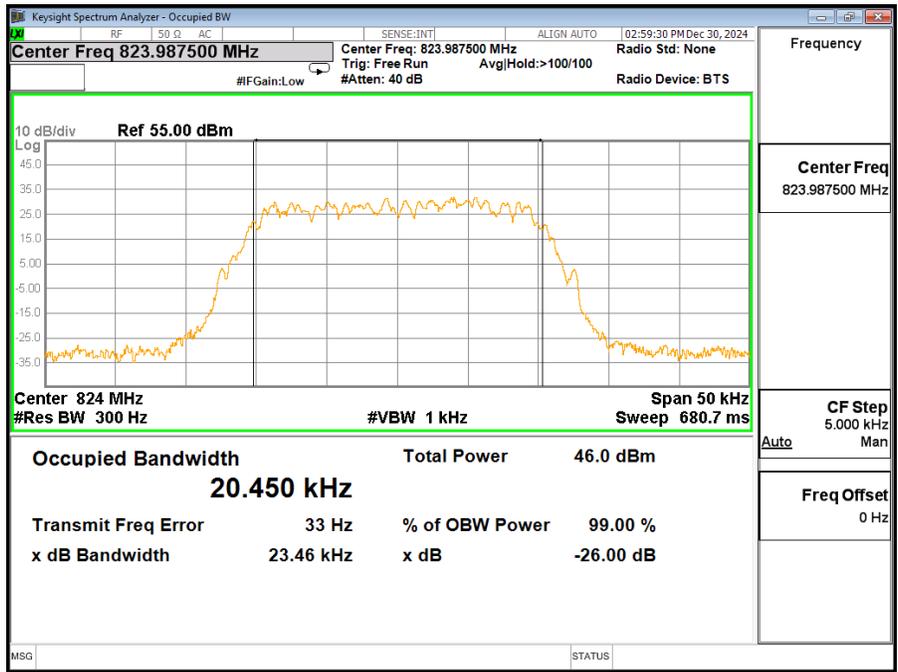
Measurement Method	Conducted	Test Channel	809.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



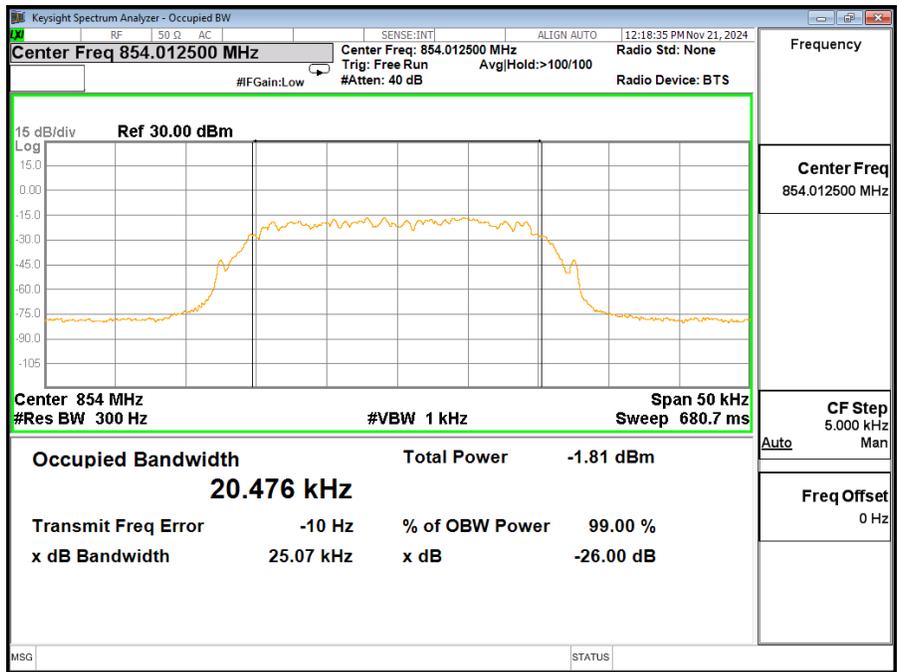
Measurement Method	Conducted	Test Channel	814.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



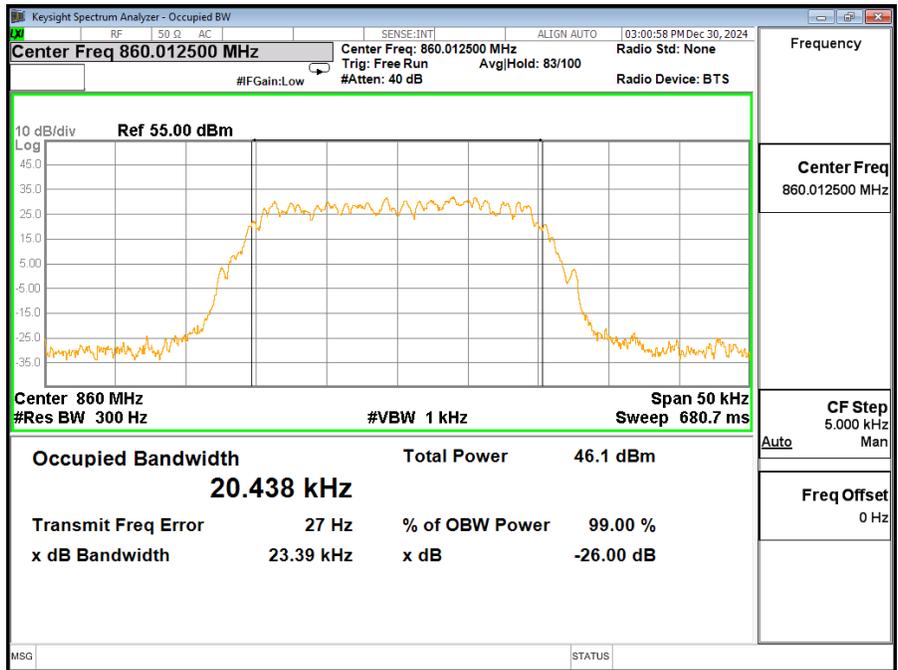
Measurement Method	Conducted	Test Channel	823.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



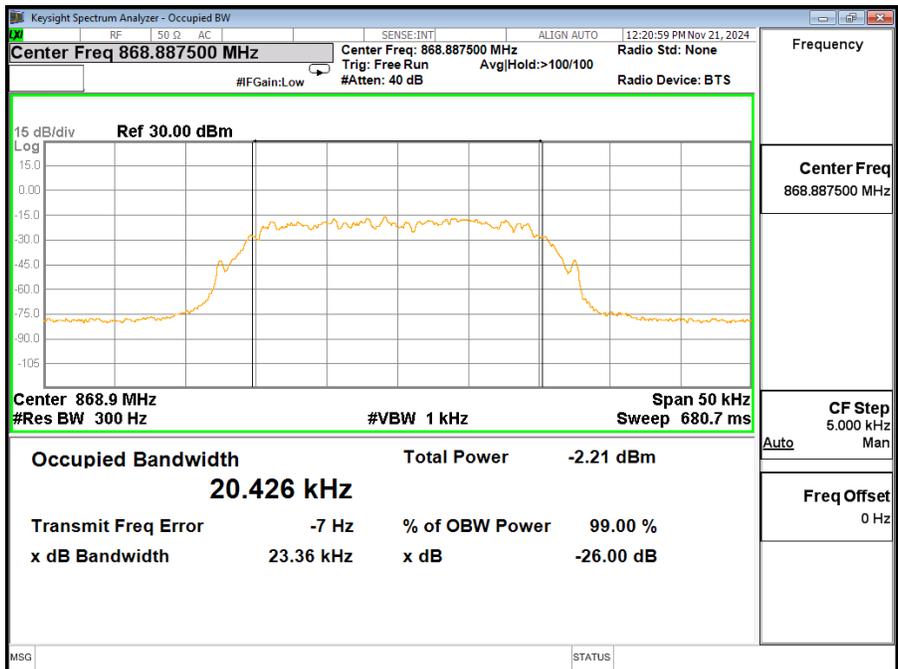
Measurement Method	Conducted	Test Channel	854.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



Measurement Method	Conducted	Test Channel	860.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



Measurement Method	Conducted	Test Channel	868.8875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



6.5. ADJACENT CHANNEL POWER

LIMITS

(1) Maximum adjacent power levels for frequencies in the 809-824/854-869 MHz band:

Frequency offset	Maximum ACP (dBc) for devices less than 15 watts	Maximum ACP (dBc) for devices 15 watts and above
25 kHz	-55 dBc	-55 dBc
50 kHz	-65 dBc	-65 dBc
75 kHz	-65 dBc	-70 dBc

(2) In any case, no requirement in excess of -36 dBm shall apply.

TEST PROCEDURE

- 1) The DUT transmitter output port was connected to RF Communications Test Set.
- 2) Path loss for the measurement included.
- 3) Use a nominal resolution bandwidth of 300 Hz and a measurement bandwidth of 18 kHz for offsets of 25 kHz, 50 kHz, and 75 kHz.
- 4) Measure ACP at the upper and lower sides of the transmitter frequency specified by the offset frequency in step 3).
- 5) Measure and record the results in the test report.

TEST SETUP



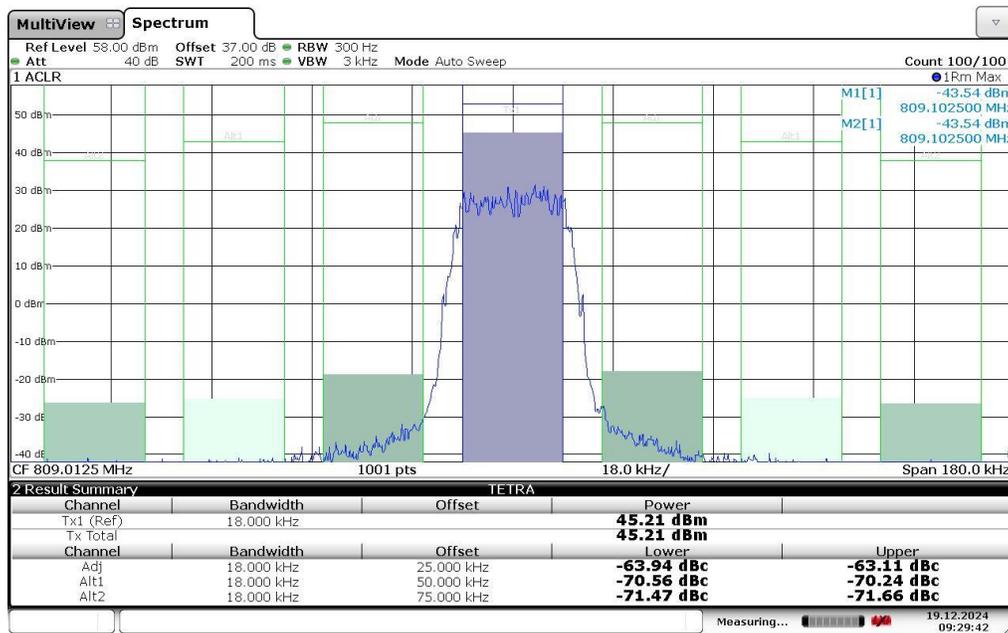
TEST ENVIRONMENT

Temperature	24.2 °C	Relative Humidity	53 %
Atmosphere Pressure	101 kPa	Test Voltage	DC 13.2 V

RESULTS

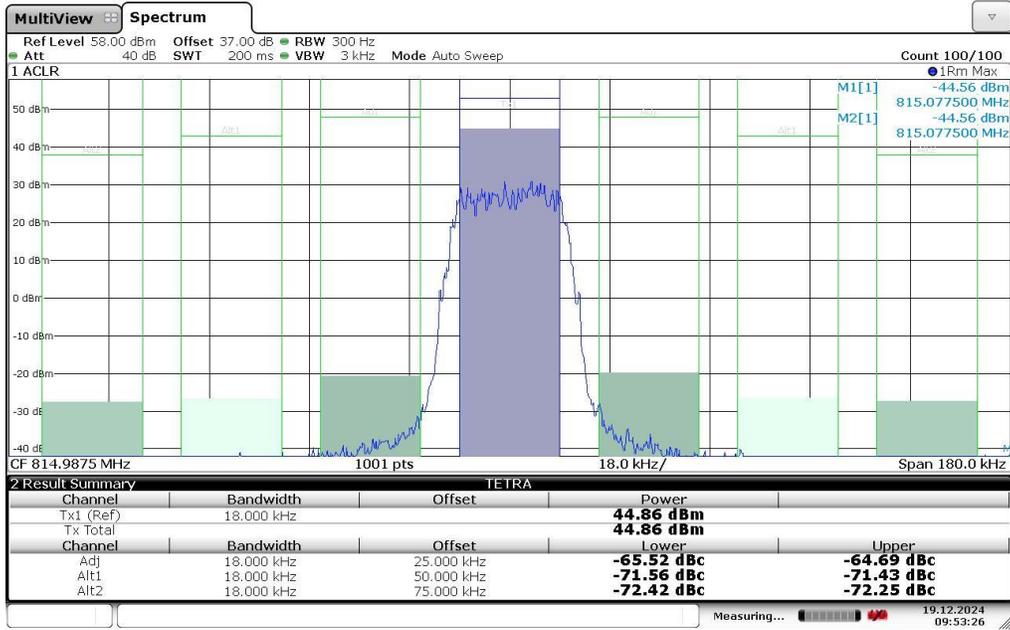
Frequency (MHz)	Channel Spacing (kHz)	Modulation Type	Frequency Offset (kHz)	Adjacent channel power (dBc)		Limit (dBc)
				Lower	Upper	
809.0125	25	pi/4 DQPSK	25	-63.94	-63.11	-55
			50	-70.56	-70.24	-65
			75	-71.47	-71.66	-65
814.9875	25	pi/4 DQPSK	25	-65.52	-64.69	-55
			50	-71.56	-71.43	-65
			75	-72.42	-72.25	-65
823.9875	25	pi/4 DQPSK	25	-65.34	-64.53	-55
			50	-71.96	-72.08	-65
			75	-72.63	-72.50	-65
854.0125	25	pi/4 DQPSK	25	-64.05	-63.99	-55
			50	-71.78	-71.25	-65
			75	-72.25	-72.17	-65
860.0125	25	pi/4 DQPSK	25	-63.97	-63.51	-55
			50	-71.32	-71.37	-65
			75	-72.20	-72.26	-65
868.8875	25	pi/4 DQPSK	25	-62.16	-62.12	-55
			50	-69.30	-69.31	-65
			75	-70.59	-70.59	-65

Measurement Method	Conducted	Test Channel	809.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



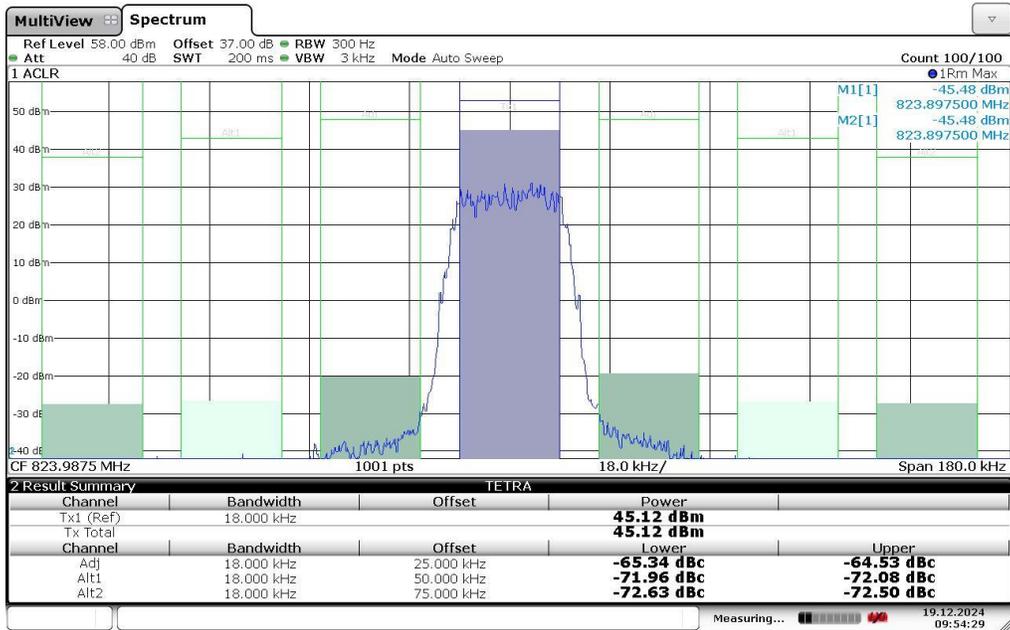
09:29:42 19.12.2024

Measurement Method	Conducted	Test Channel	814.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



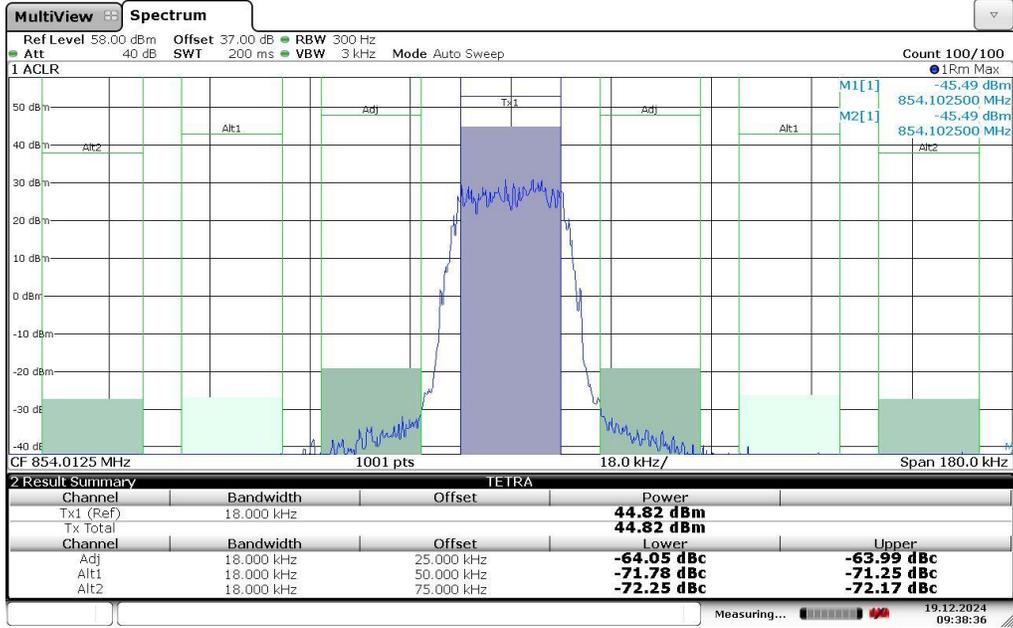
09:53:26 19.12.2024

Measurement Method	Conducted	Test Channel	823.9875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



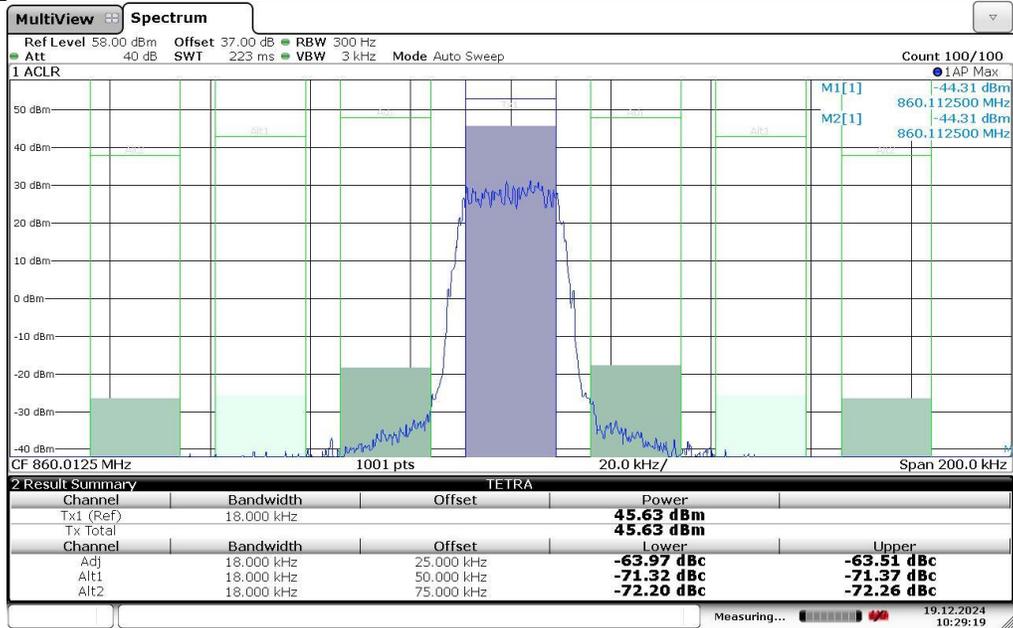
09:54:30 19.12.2024

Measurement Method	Conducted	Test Channel	854.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



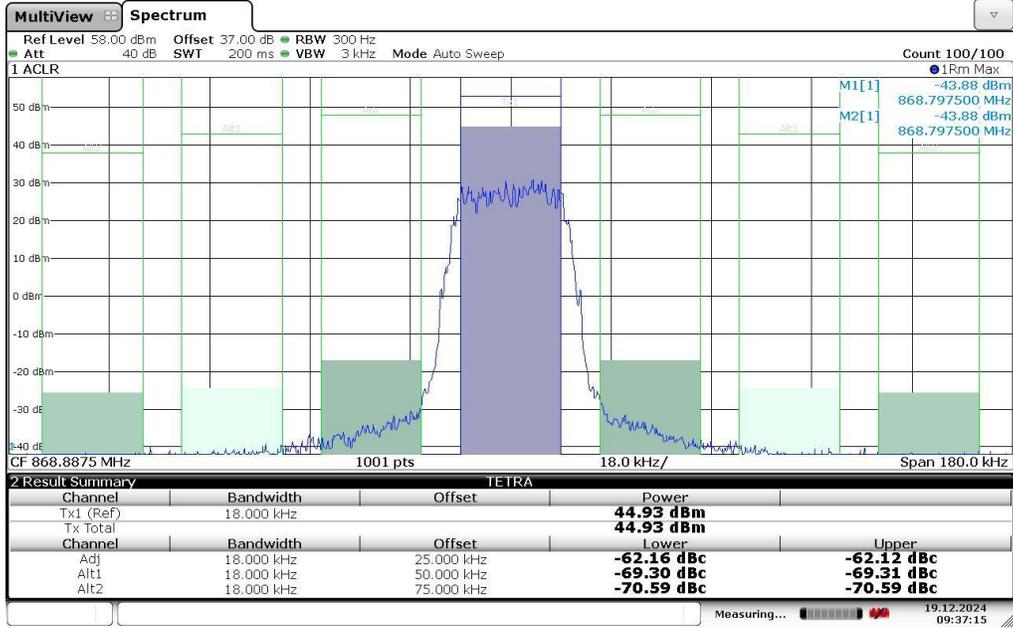
09:38:37 19.12.2024

Measurement Method	Conducted	Test Channel	860.0125 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



10:29:20 19.12.2024

Measurement Method	Conducted	Test Channel	868.8875 MHz
Channel Separation	25 kHz	Modulation	pi/4 DQPSK



09:37:16 19.12.2024

6.6. FREQUENCY STABILITY

LIMITS

(a) Unless noted elsewhere, transmitters used in the services governed by this part must have a minimum frequency stability as specified in the following table.

Frequency range (MHz)	Fixed and base stations	Mobile stations	
		Over 2 watts output power	2 watts or less output power
Below 25	^{1 2 3} 100	100	200
25-50	20	20	50
72-76	5		50
150-174	^{5 11} 5	⁶ 5	^{4 6} 50
216-220	1.0		1.0
220-222 ¹²	0.1	1.5	1.5
421-512	^{7 11 14} 2.5	⁸ 5	⁸ 5
806-809	¹⁴ 1.0	1.5	1.5
809-824	¹⁴ 1.5	2.5	2.5
851-854	1.0	1.5	1.5
854-869	1.5	2.5	2.5
896-901	¹⁴ 0.1	1.5	1.5
902-928	2.5	2.5	2.5
902-928 ¹³	2.5	2.5	2.5
929-930	1.5		
935-940	0.1	1.5	1.5
1427-1435	⁹ 300	300	300
Above 2450 ¹⁰			

¹Fixed and base stations with over 200 watts transmitter power must have a frequency stability of 50 ppm except for equipment used in the Public Safety Pool where the frequency stability is 100 ppm.

²For single sideband operations below 25 MHz, the carrier frequency must be maintained within 50 Hz of the authorized carrier frequency.

³Travelers information station transmitters operating from 530-1700 kHz and transmitters exceeding 200 watts peak envelope power used for disaster communications and long distance circuit operations pursuant to §§90.242 and 90.264 must maintain the carrier frequency to within 20 Hz of the authorized frequency.

⁴Stations operating in the 154.45 to 154.49 MHz or the 173.2 to 173.4 MHz bands must have a frequency stability of 5 ppm.

⁵In the 150-174 MHz band, fixed and base stations with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm. Fixed and base stations with a 6.25 kHz channel bandwidth must have a frequency stability of 1.0 ppm.

⁶In the 150-174 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth or designed to operate on a frequency specifically designated for itinerant use or designed for low-power operation of two watts or less, must have a frequency stability of 5.0 ppm. Mobile stations designed to operate with a 6.25 kHz channel bandwidth must have a frequency stability of 2.0 ppm.

⁷In the 421-512 MHz band, fixed and base stations with a 12.5 kHz channel bandwidth must have a frequency stability of 1.5 ppm. Fixed and base stations with a 6.25 kHz channel bandwidth must have a frequency stability of 0.5 ppm.

⁸In the 421-512 MHz band, mobile stations designed to operate with a 12.5 kHz channel bandwidth must have a frequency stability of 2.5 ppm. Mobile stations designed to operate with a 6.25 kHz channel bandwidth must have a frequency stability of 1.0 ppm.

⁹Fixed stations with output powers above 120 watts and necessary bandwidth less than 3 kHz must operate with a frequency stability of 100 ppm. Fixed stations with output powers less than 120 watts and using time-division multiplex, must operate with a frequency stability of 500 ppm.

¹⁰Except for DSRCS equipment in the 5850-5925 MHz band, frequency stability is to be specified in the station authorization. Frequency stability for DSRCS equipment in the 5850-5925 MHz band is specified in subpart M of this part.

¹¹Paging transmitters operating on paging-only frequencies must operate with frequency stability of 5 ppm in the 150-174 MHz band and 2.5 ppm in the 421-512 MHz band.

¹²Mobile units may utilize synchronizing signals from associated base stations to achieve the specified carrier stability.

¹³Fixed non-multilateration transmitters with an authorized bandwidth that is more than 40 kHz from the band edge, intermittently operated hand-held readers, and mobile transponders are not subject to frequency tolerance restrictions.

¹⁴Control stations may operate with the frequency tolerance specified for associated mobile frequencies.

(b) For the purpose of determining the frequency stability limits, the power of a transmitter is considered to be the maximum rated output power as specified by the manufacturer.

PROCEDURE

Frequency stability over variations in temperature:

- 1) The EUT transmitter output port was connected to communication tester.
- 2) The EUT was placed inside the temperature chamber.
- 3) Supply the EUT with a DC 12 V voltage by DC power supply.
- 4) Turn EUT off and set the chamber temperature to -30 °C. After the temperature stabilized for approximately 30 minutes recorded the frequency as MCF_{MHz} .
- 5) Calculate the ppm frequency error by the following:

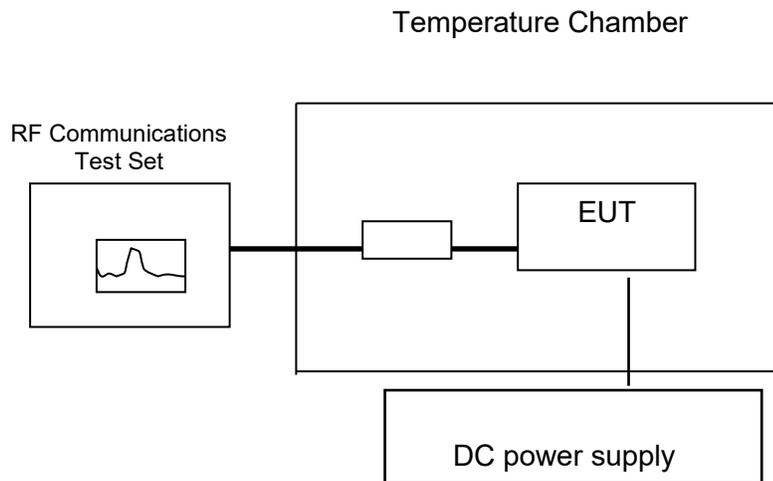
$$\text{ppm error} = (MCF_{MHz} / ACF_{MHz} - 1) * 10^6$$
 where
 MCF_{MHz} is the Measured Carrier Frequency in MHz ACF_{MHz} is the Assigned Carrier Frequency in MHz
- 6) Repeat step 4 measure with 10 °C increased per stage until the highest temperature of +60 °C reached.

Frequency stability when varying supply voltage:

- 7) The EUT transmitter output port was connected to communication tester.
- 8) The EUT was placed inside the temperature chamber at +15 °C to +25 °C.
- 9) Supply the EUT with a DC 12 V voltage by power supply.
- 10) Recorded the frequency as MCF_{MHz} .
- 11) Calculate the ppm frequency error by the following:

$$\text{ppm error} = (MCF_{MHz} / ACF_{MHz} - 1) * 10^6$$
 where
 MCF_{MHz} is the Measured Carrier Frequency in MHz ACF_{MHz} is the Assigned Carrier Frequency in MHz
- 12) Repeat step 4 measure with vary primary supply voltage from 85 % to 115 % of the nominal value for other than hand carried battery equipment.

TEST SETUP



RESULTS

Compare to the limit of the standard:

Frequency / Channel Spacing	868.8875 MHz / 25 kHz				
Temperature, °C	25				
Voltage	Voltage	Frequency	Frequency Stability	Low Limit	High Limit
%	V	MHz	PPM	PPM	PPM
85	10.2	868.887446	-0.06	-1.5	1.5
90	10.8	868.887452	-0.06	-1.5	1.5
95	11.4	868.887431	-0.08	-1.5	1.5
100	12	868.887438	-0.07	-1.5	1.5
105	12.6	868.887424	-0.09	-1.5	1.5
110	13.2	868.887455	-0.05	-1.5	1.5
115	13.8	868.887463	-0.04	-1.5	1.5

Frequency / Channel Spacing	868.8875 MHz / 25 kHz			
Temperature	Frequency	Frequency Stability	Low Limit	High Limit
°C	MHz	PPM	PPM	PPM
-30	868.887437	-0.07	-1.5	1.5
-20	868.887444	-0.06	-1.5	1.5
-10	868.887441	-0.07	-1.5	1.5
0	868.887458	-0.05	-1.5	1.5
10	868.887432	-0.08	-1.5	1.5
20	868.887443	-0.07	-1.5	1.5
30	868.887429	-0.08	-1.5	1.5
40	868.887452	-0.06	-1.5	1.5
50	868.887430	-0.08	-1.5	1.5
60	868.887439	-0.07	-1.5	1.5

Compare to the limit declared by manufacturer (which is more strict than standard):

Frequency / Channel Spacing	868.8875 MHz / 25 kHz				
Temperature, °C	25				
Voltage	Voltage	Frequency	Frequency Stability	Low Limit	High Limit
%	V	MHz	PPM	PPM	PPM
85	10.2	868.887453	-0.05	-0.1	0.1
90	10.8	868.887462	-0.04	-0.1	0.1
95	11.4	868.887441	-0.07	-0.1	0.1
100	12	868.887435	-0.07	-0.1	0.1
105	12.6	868.887438	-0.07	-0.1	0.1
110	13.2	868.887446	-0.06	-0.1	0.1
115	13.8	868.887457	-0.05	-0.1	0.1

Frequency / Channel Spacing	851.0125 MHz / 25 kHz			
Temperature	Frequency	Frequency Stability	Low Limit	High Limit
°C	MHz	PPM	PPM	PPM
-30	868.887445	-0.06	-0.1	0.1
-20	868.887452	-0.06	-0.1	0.1
-10	868.887449	-0.06	-0.1	0.1
0	868.887455	-0.05	-0.1	0.1
10	868.88748	-0.02	-0.1	0.1
20	868.887462	-0.04	-0.1	0.1
30	868.887436	-0.07	-0.1	0.1
40	868.887441	-0.07	-0.1	0.1
50	868.887434	-0.08	-0.1	0.1
60	868.887444	-0.06	-0.1	0.1

END OF REPORT