MOTOROLA SOLUTIONS

CERTIFICATE 2518.08

SAMM 825

MOTOROLA PENANG ADV. COMM. LABORATORY
Motorola Solutions Malaysia Sdn Bhd,
Plot 2A, Medan Bayan Lepas,
Mukim 12 S.W.D, 11900 Bayan Lepas,
Penang, Malaysia.

FCC / ISED TEST REPORT
Report Revision : Rev.A

Date/s Tested	:	05-January-2024 - 18-January-2024
Report Issue Date	:	11-March-2024
Manufacturer/Location	:	MOTOROLA SOLUTIONS INC. (SCHAUMBURG)
Manufacturer Address	:	1301 E. ALGONQUIN ROAD, BLDG IL02 ROOM 3035, SCHAUMBURG, IL 60196
Requestor	:	ROLANDO HERNANDEZ
Product Type	:	Hand-held
Product Version (PMN)	:	APX NEXT
Model Number (HVIN)	:	H55TGT9PW8AN
Frequency Band	:	Refer to section 1.4
Max RF Output Power	:	252 mW
Applicant Name	:	Motorola Solutions Inc
Applicant Address	:	Plot 2A, Medan Bayan lepas, Mukim 12, S.W.D. 11900 Bayan Lepas, Penang, Malaysia
FCC Registrations	:	461337
ISED Registrations	:	MY0001
Firmware Version (FVIN)	:	D05.75.54 (BP), D00.00.14 (AP)

The equipment was tested accordance to the requirement listed below:

(LTE Band 4) **FCC 47 CFR Part 2 / 27** **ISED RSS GEN / 139**	**PASS**

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Prepared By:

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Approve Signatory:

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Responsible Engineer

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REVISION HISTORY

Revision History	Description	Date	Originator
Rev A.	Initial Report	22-January-2024	Awatif Rahman

1.0. Summary of Test Results

FCC Clause	ISED Clause	Test Item	Results	Remarks	Serial Number Tested
2.1046 27.50(d)(6)	RSS-Gen 6.12 RSS-139 4.1	Conducted RF Output Power	Pass	Meet the requirement of limit	437TZP0846
27.50(d)(5)	RSS-139 6.5	Peak-to-Average Power Ratio	NA	NA	SEE NOTE1
2.1049 27.53(h)(3)	RSS-Gen 6.6	Occupied Bandwidth (26dBc, 99%)	NA	NA	SEE NOTE1
2.1055 27.54	RSS-139 6.4	Frequency Stability	NA	NA	SEE NOTE1
2.1051 27.53(h)(1)(3)	RSS-Gen 6.13 RSS-139 6.6	Band Edge Conducted Spurious Emission	NA	NA	SEE NOTE1
2.1051 27.53(h)(1)	RSS-Gen 6.13 RSS-139 6.6	Conducted Spurious Emissions	Pass	Meet the requirement of limit	437TZP0846
2.1053 27.53 (h)	RSS-139 6.6	Radiated Spurious Emission	Pass	Meet the requirement of limit	437TZP0815, 437TZP0835, 437TZP0845
2.1049 27.50(d)(4)	RSS-139 6.5	Equivalent Isotropically Radiated Power (EIRP)	Pass	Meet the requirement of limit	437TZP0846

NOTE1: Selection of test parameters, the report contain a limited number of parameters deemed to be influenced by the relevant design changes, as agreed with the applicant.

1.1. Measurement Uncertainty

Measurement	Frequency	Expended Uncertainty (k=1.96) (±dB)
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	5.01
	200MHz ~ 1000MHz	5.01
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.01
	18GHz ~ 25GHz	5.01

1.2. Equipment List

Description	Model	Serial Number	Calibration Date	Calibration Due Date
BROADBAND ATE #1 (RF CONDUCTED TESTS)				
WIDEBAND RADIO COMMUNICATION TESTER	CMW500	154550	08-AUG-23	08-AUG-24
SIGNAL ANALYZER	FSV40	101431	07-AUG-23	07-AUG-24
CHAMBER	SH-641	92003150	15-SEP-23	15-SEP-24
POWER SUPPLY	6652A	3640A02967	15-OCT-23	15-OCT-24
TEST SOFTWARE	CMWRUN			
VERSION	V1.9.8			
EMC CHAMBER 1				
DRG HORN FREQ.	SAS-571	1143	08-MAR-23	08-MAR-25
DRG HORN FREQ.	SAS-571	720	18-APR-23	18-APR-25
DC POWER SUPPLY	NR973A	MY54180189	30-AUG-23	30-AUG-24
SIGNAL GENERATOR	SMB 100A	182511	04-JUN-21	04-JUN-24
EMI TEST RECEIVER	ESW44	101731	11-AUG-23	11-AUG-24
5m SEMI-ANECHOIC CHAMBER	S800-HX	J2308	NOT REQUIRED	NOT REQUIRED
BILOG ANTENNA	CBL6112B	2950	14-DEC-23	14-DEC-24
BILOG ANTENNA	CBL6112B	2964	25-SEP-23	25-SEP-24
DATA LOGGER THERMOHYGROMETER	SDL500	A.016800	21-JUN-23	21-JUN-24
SYSTEM CONTROLLER	SC104V	050806-1	NOT REQUIRED	NOT REQUIRED
TURNTABLE FLUSH MOUNT 2M	FM2011	NA	NOT REQUIRED	NOT REQUIRED
ANTENNA POSITIONING TOWER	TLT2	NA	NOT REQUIRED	NOT REQUIRED
BROAD-BAND HORN ANTENNA	BBHA9170	BBHA9170255	22-FEB-23	22-FEB-24
PREAMPLIFIER 18-40GHz	MITEQ HI GAIN SUCOFLEX	002	NOT REQUIRED	NOT REQUIRED
PREAMPLIFIER	PAM-0118P	269	28-MAR-23	28-MAR-24
LOOP ANTENNA	6502	00203479	16-FEB-23	16-FEB-24
TEST SOFTWARE	EMC_FCC_IC_BLUETOOTH_RE_TEST			
VERSION	EMC_FCC_RE_v1.6.5			

1.3. General Information

General Description of EUT

Product	APX NEXT		
Brand	Motorola Solutions		
Test Model	H55TGT9PW8AN		
Power Supply Rating	7.5Vdc		
Mode of operation	LTE Band 4		
Modulation Type	QPSK, 16QAM		
Operating Frequency	LTE Band 4	Channel Bandwidth 1.4MHz	1710.7MHz~1754.3MHz
		Channel Bandwidth 3MHz	1711.5MHz~1753.5MHz
		Channel Bandwidth 5MHz	1712.5MHz~1752.5MHz
		Channel Bandwidth 10MHz	1715.0MHz~1750.0MHz
		Channel Bandwidth 15MHz	1717.5MHz~1747.5MHz
		Channel Bandwidth 20MHz	1720.0MHz~1745.0MHz
Max. Conducted RF Output Power	LTE Band 4 QPSK	Channel Bandwidth 1.4MHz	23.277 dBm (0.213 W)
		Channel Bandwidth 3MHz	23.521 dBm (0.225 W)
		Channel Bandwidth 5MHz	23.267 dBm (0.212W)
		Channel Bandwidth 10MHz	23.45 dBm (0.221 W)
		Channel Bandwidth 15MHz	**23.702 dBm (0.235 W)**
		Channel Bandwidth 20MHz	23.457 dBm (0.222 W)
	LTE Band 4 16QAM	Channel Bandwidth 1.4MHz	22.424 dBm (0.175W)
		Channel Bandwidth 3MHz	22.704 dBm (0.186 W)
		Channel Bandwidth 5MHz	22.353 dBm (0.172 W)
		Channel Bandwidth 10MHz	22.847 dBm (0.193 W)
		Channel Bandwidth 15MHz	22.709 dBm (0.187 W)
		Channel Bandwidth 20MHz	**22.936 dBm (0.197 W)**
Antenna Type	LTE Band 4	Stamped Metal with 1.02dBi gain	

Note:

1. The EUT contains following accessory devices and data cable.

Item	Brand	Model or P/N	Specification
BATTERY	MOTOROLA	NNTN9087A	STANDARD BATT, IMPRES GEN2, LIION, IP68, 3800T
BATTERY	MOTOROLA	NNTN9089B	BATTERY PACK,BATTERY PACK,IMPRES GEN2, LIION, IP68, 5850T
CHARGER	MOTOROLA	NNTN9115A	MULTI-UNIT, IMPRES G2, 6-DISP, BASE W/INSERTS; W/US LINE CORD
CABLE	MOTOROLA	3087791G01	US LINE CORD
ANTENNA	MOTOROLA	AN000296A01	SHORT STUBBY 7/800MHZ, (760 - 870 MHZ)

Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	Product	Brand	Model No.	Serial No.	FCC ID
1	Wideband Radio Communication Tester	R&S	CMW500	154550	NA

NO.	Signal Cable Description of The above Support Units
1	NA

Note:
1. All power cords of the above support units are non-shielded.
2. Item 1 acted as a communication partner to transfer data.

EUT Operating Conditions

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC 47 CFR Part 2
FCC 47 CFR Part 27
KDB 971168 D01 Power Meas License Digital Systems v03r01
KDB 971168 D02 Misc OOBE License Digital Systems v02r01
ANSI C63.26-2015

NOTE: All test items have been performed and recorded as per the above standards.

1.4. Channel number and frequency info

Band	Bandwidth supported	Available Channel Number	Test Channel Number			Test Channel Frequency (MHz)		
			Low Channel	Mid Channel	High Channel	Low Channel	Mid Channel	High Channel
LTE Band 4	1.4 MHz	19957 ~ 20393	19957	20175	20393	1710.7	1732.5	1754.3
	3 MHz	19965 ~ 20386	19965	20175	20385	1711.5	1732.5	1753.5
	5 MHz	19975 ~ 20375	19975	20175	20375	1712.5	1732.5	1752.5
	10 MHz	20000 ~ 20350	20000	20175	20350	1715.0	1732.5	1750.0
	15 MHz	20025 ~ 20325	20025	20175	20325	1717.5	1732.5	1747.5
	20 MHz	20050 ~ 20300	20050	20175	20300	1720.0	1732.5	1745.0

1.5. Test Mode Applicability and Tested Channel Detail

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The Radiated Emission and Equivalent Isotropically Radiated Power (EIRP) worst case was found when positioned on Z-Plane for LTE band 4.
Pre-scan also have been conducted with the accessory devices listed in section table 1.3, only the worst case radiated emission results of the combination test configuration is reported in this report.
The following channel(s) was (were) selected for the final test as listed below:

LTE Band 4

Test Item	Available Channel	Tested Channel	Channel Bandwidth	Modulation	Mode
Conducted RF Output Power	19957 ~ 20393	19957, 20175, 20393	1.4 MHz	QPSK, 16QAM	As per table 1.6.3
	19965 ~ 20386	19965, 20175, 20385	3 MHz		
	19975 ~ 20375	19975, 20175, 20375	5 MHz		
	20000 ~ 20350	20000, 20175, 20350	10 MHz		
	20025 ~ 20325	20025, 20175, 20325	15 MHz		
	20050 ~ 20300	20050, 20175, 20300	20 MHz		
Conducted Spurious Emission	19957 ~ 20393	19957, 20175, 20393	1.4 MHz	QPSK	1 RB / 3 RB Offset
	19965 ~ 20386	19965, 20175, 20385	3 MHz		1 RB / 7 RB Offset
	19975 ~ 20375	19975, 20175, 20375	5 MHz		1 RB / 0 RB Offset
	20000 ~ 20350	20000, 20175, 20350	10 MHz		1 RB / 49 RB Offset
	20025 ~ 20325	20025, 20175, 20325	15 MHz		1 RB / 0 RB Offset
	20050 ~ 20300	20050, 20175, 20300	20 MHz		1 RB / 0 RB Offset
Radiated Emission	20025 ~ 20325	20325	15 MHz	QPSK	1 RB / 0 RB Offset
Equivalent Isotropically Radiated Power (EIRP)	19957 ~ 20393	19957, 20175, 20393	1.4 MHz	QPSK, 16QAM	As per table 1.6.4
	19965 ~ 20386	19965, 20175, 20385	3 MHz		
	19975 ~ 20375	19975, 20175, 20375	5 MHz		
	20000 ~ 20350	20000, 20175, 20350	10 MHz		
	20025 ~ 20325	20025, 20175, 20325	15 MHz		
	20050 ~ 20300	20050, 20175, 20300	20 MHz		

NOTE:

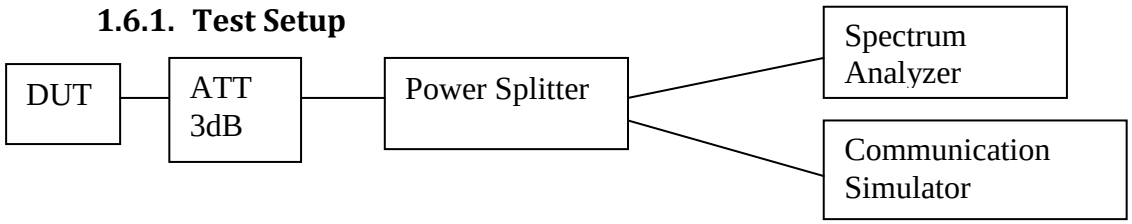
1. The Conducted RF Output Power for QPSK and 16QAM, measured value of QPSK mode is higher than 16QAM mode. Therefore, only Conducted Spurious Emission and Radiated Emission had been tested under QPSK modes.
2. Band Edge was performed with 1 and full Resource Block at the lowest and highest operating frequency band.
3. The Equivalent Isotropically Radiated Power (EIRP) was performed based on worst case mode from Conducted RF Output Power in QPSK and 16QAM modulation.
4. Peak to Average and Occupied Bandwidth were performed with full Resource Block which is the worst case.
5. Frequency stability was performed with full Resource Block in QPSK modulation.

Test Condition:

Test Item	Environmental Conditions	Input Power	Tested By
Conducted RF Output Power	25ºC, 50% RH	7.5V DC	Awatif Rahman
Peak-to-Average Power Ratio	NA	NA	NA
Occupied Bandwidth	NA	NA	NA
Frequency Stability	NA	NA	NA
Band Edge Conducted Spurious Emission	NA	NA	NA
Conducted Spurious Emission	25ºC, 50% RH	7.5V DC	Awatif Rahman
Radiated Spurious Emission	23.7ºC, 69.2% RH	7.5V DC	Nazrin & Fuad
Equivalent Isotropically Radiated Power (EIRP)	25ºC, 50% RH	7.5V DC	Awatif Rahman

1.6. Conducted RF Output Power

1.6.1. Test Setup



1. The DUT transmitter output port was connected to communication simulator with above setup.
2. Path loss for the measurement included.
3. Set DUT to transmit maximum power through communication simulator
4. All the measurement was done at low, mid, high channel for each band and different modulation.
5. Record the average power into the test report.

1.6.2. Limits

FCC: Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.
ISED: The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt.

1.6.3. Conducted RF Output Power – LTE Band 4(1710-1755MHz)

Conducted Output Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			19957	20175	20393	19957	20175	20393
			1710.7 MHz	1732.5 MHz	1754.3 MHz	1710.7 MHz	1732.5 MHz	1754.3 MHz
Band 4 / 1.4 MHz	**1**	**0**	22.804	23.198	23.13	21.937	22.315	22.204
	1	**3**	22.864	**23.277**	23.195	22.017	22.267	22.28
	1	**5**	22.81	23.232	23.147	21.94	22.231	22.222
	3	**0**	22.817	23.157	23.033	21.847	22.36	22.222
	3	**2**	22.874	23.23	23.13	21.901	**22.424**	22.311
	3	**3**	22.83	23.171	23.05	22.027	22.384	22.24
	6	**0**	21.889	22.225	22.128	20.959	21.332	21.215

Conducted Output Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			19965	20175	20385	19965	20175	20385
			1711.5 MHz	1732.5 MHz	1753.5 MHz	1711.5 MHz	1732.5 MHz	1753.5 MHz
Band 4 / 3MHz	**1**	**0**	23.081	23.455	23.28	22.218	22.481	22.655
	1	**7**	23.118	**23.521**	23.355	22.209	22.537	**22.704**
	1	**14**	23.041	23.426	23.282	22.125	22.479	22.587
	8	**0**	22.106	22.43	22.324	21.13	21.518	21.488
	8	**4**	22.115	22.456	22.346	21.177	21.546	21.522
	8	**7**	22.082	22.438	22.314	21.102	21.525	21.479
	15	**0**	22.124	22.439	22.335	21.129	21.537	21.411

Conducted Output Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			19975	20175	20375	19975	20175	20375
			1712.5MHz	1732.5MHz	1752.5MHz	1712.5MHz	1732.5MHz	1752.5MHz
Band 4 / 5MHz	**1**	**0**	22.99	23.187	**23.267**	22.253	22.234	**22.353**
	1	**13**	22.979	23.252	23.259	22.251	22.294	22.345
	1	**25**	22.983	23.202	23.211	22.249	22.294	22.302
	12	**0**	22.019	22.327	22.233	21.074	21.389	21.187
	12	**6**	22.003	22.336	22.24	21.063	21.385	21.196
	12	**13**	21.977	22.306	22.176	21.041	21.382	21.147
	25	**0**	22.016	22.333	22.229	21.074	21.36	21.202

Conducted Output Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20000	20175	20350	20000	20175	20350
			1715MHz	1732.5MHz	1750MHz	1715MHz	1732.5MHz	1750MHz
Band 4 / 10MHz	**1**	**0**	23.155	23.19	23.449	22.297	22.17	**22.847**
	1	**25**	23.092	23.416	23.378	22.222	22.425	22.707
	1	**49**	23.129	**23.45**	23.403	22.207	22.46	22.637
	25	**0**	22.184	22.333	22.522	21.361	21.457	21.512
	25	**13**	22.187	22.481	22.519	21.36	21.622	21.45
	25	**25**	22.169	22.482	22.506	21.327	21.598	21.451
	50	**0**	22.194	22.49	22.516	21.276	21.616	21.461

Conducted Output Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20025	20175	20325	20025	20175	20325
			1717.5MHz	1732.5MHz	1747.5MHz	1717.5MHz	1732.5MHz	1747.5MHz
Band 4 / 15MHz	**1**	**0**	23.309	23.405	**23.702**	22.652	22.406	**22.709**
	1	**38**	23.194	23.472	23.495	22.519	22.505	22.509
	1	**74**	23.262	23.526	23.489	22.538	22.567	22.488
	36	**0**	22.294	22.29	22.636	21.4	21.368	21.756
	36	**19**	22.263	22.485	22.529	21.4	21.635	21.626
	36	**39**	22.269	22.481	22.521	21.384	21.644	21.613
	75	**0**	22.257	22.451	22.605	21.389	21.595	21.706

Conducted Output Power (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20050	20175	20300	20050	20175	20300
			1720MHz	1732.5MHz	1745MHz	1720MHz	1732.5MHz	1745MHz
Band 4 / 20MHz	**1**	**0**	23.194	23.271	**23.457**	22.806	22.855	**22.936**
	1	**49**	23.117	23.22	23.289	22.583	22.799	22.691
	1	**99**	23.113	23.278	23.279	22.533	22.859	22.704
	50	**0**	22.24	22.182	22.565	21.327	21.242	21.619
	50	**25**	22.256	22.412	22.556	21.35	21.495	21.609
	50	**50**	22.249	22.374	22.408	21.329	21.477	21.465
	100	**0**	22.228	22.432	22.536	21.353	21.548	21.666

1.6.4. Equivalent Isotropically Radiated Power (EIRP) - LTE Band 4 (1710-1755MHz)

EIRP (dBm)									
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation			
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	
			19957	20175	20393	19957	20175	20393	
			1710.7 MHz	1732.5 MHz	1754.3 MHz	1710.7 MHz	1732.5 MHz	1754.3 MHz	
Band 4 / 1.4 MHz	**1**	**0**	23.824	24.218	24.15	22.957	23.335	23.224	
	1	**3**	23.884	**24.297**	24.215	23.037	23.287	23.3	
	1	**5**	23.83	24.252	24.167	22.96	23.251	23.242	
	3	**0**	23.837	24.177	24.053	22.867	23.38	23.242	
	3	**2**	23.894	24.25	24.15	22.921	**23.444**	23.331	
	3	**3**	23.85	24.191	24.07	23.047	23.404	23.26	
	6	**0**	22.909	23.245	23.148	21.979	22.352	22.235	

EIRP (dBm)									
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation			
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	
			19965	20175	20385	19965	20175	20385	
			1711.5 MHz	1732.5 MHz	1753.5 MHz	1711.5 MHz	1732.5 MHz	1753.5 MHz	
Band 4 / 3MHz	**1**	**0**	24.101	24.475	24.3	23.238	23.501	23.675	
	1	**7**	24.138	**24.541**	24.375	23.229	23.557	**23.724**	
	1	**14**	24.061	24.446	24.302	23.145	23.499	23.607	
	8	**0**	23.126	23.45	23.344	22.15	22.538	22.508	
	8	**4**	23.135	23.476	23.366	22.197	22.566	22.542	
	8	**7**	23.102	23.458	23.334	22.122	22.545	22.499	
	15	**0**	23.144	23.459	23.355	22.149	22.557	22.431	

EIRP (dBm)									
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation			
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH	
			19975	20175	20375	19975	20175	20375	
			1712.5MHz	1732.5MHz	1752.5MHz	1712.5MHz	1732.5MHz	1752.5MHz	
Band 4 / 5MHz	**1**	**0**	24.01	24.207	**24.287**	23.273	23.254	**23.373**	
	1	**13**	23.999	24.272	24.279	23.271	23.314	23.365	
	1	**25**	24.003	24.222	24.231	23.269	23.314	23.322	
	12	**0**	23.039	23.347	23.253	22.094	22.409	22.207	
	12	**6**	23.023	23.356	23.26	22.083	22.405	22.216	
	12	**13**	22.997	23.326	23.196	22.061	22.402	22.167	
	25	**0**	23.036	23.353	23.249	22.094	22.38	22.222	

EIRP (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20000	20175	20350	20000	20175	20350
			1715MHz	1732.5MHz	1750MHz	1715MHz	1732.5MHz	1750MHz
Band 4 / 10MHz	**1**	**0**	24.175	24.21	24.469	23.317	23.19	**23.867**
	1	**25**	24.112	24.436	24.398	23.242	23.445	23.727
	1	**49**	24.149	**24.47**	24.423	23.227	23.48	23.657
	25	**0**	23.204	23.353	23.542	22.381	22.477	22.532
	25	**13**	23.207	23.501	23.539	22.38	22.642	22.47
	25	**25**	23.189	23.502	23.526	22.347	22.618	22.471
	50	**0**	23.214	23.51	23.536	22.296	22.636	22.481

EIRP (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20025	20175	20325	20025	20175	20325
			1717.5MHz	1732.5MHz	1747.5MHz	1717.5MHz	1732.5MHz	1747.5MHz
Band 4 / 15MHz	**1**	**0**	24.329	24.425	**24.722**	23.672	23.426	**23.729**
	1	**38**	24.214	24.492	24.515	23.539	23.525	23.529
	1	**74**	24.282	24.546	24.509	23.558	23.587	23.508
	36	**0**	23.314	23.31	23.656	22.42	22.388	22.776
	36	**19**	23.283	23.505	23.549	22.42	22.655	22.646
	36	**39**	23.289	23.501	23.541	22.404	22.664	22.633
	75	**0**	23.277	23.471	23.625	22.409	22.615	22.726

EIRP (dBm)								
LTE Band/BW	RB Size	RB Offset	QPSK Modulation			16QAM Modulation		
			Low CH	Mid CH	High CH	Low CH	Mid CH	High CH
			20050	20175	20300	20050	20175	20300
			1720MHz	1732.5MHz	1745MHz	1720MHz	1732.5MHz	1745MHz
Band 4 / 20MHz	**1**	**0**	24.214	24.291	**24.477**	23.826	23.875	**23.956**
	1	**49**	24.137	24.24	24.309	23.603	23.819	23.711
	1	**99**	24.133	24.298	24.299	23.553	23.879	23.724
	50	**0**	23.26	23.202	23.585	22.347	22.262	22.639
	50	**25**	23.276	23.432	23.576	22.37	22.515	22.629
	50	**50**	23.269	23.394	23.428	22.349	22.497	22.485
	100	**0**	23.248	23.452	23.556	22.373	22.568	22.686

The maximum ERP/EIRP from the measured RF output power is given in Equation as follows:

$$\mathbf{EIRP} = \mathbf{P_{Meas}} + \mathbf{G_T}$$

$$\mathbf{ERP} = \mathbf{EIRP} - \mathbf{2.15}$$

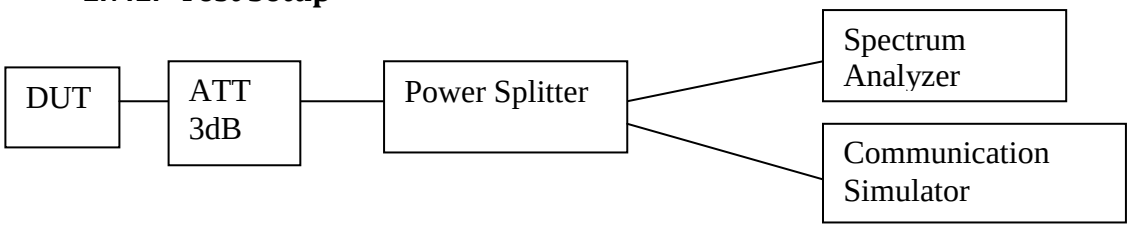
Where, ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively (Expressed in the same units as PMeas, e.g., dBm)

$\mathbf{P_{Meas}}$ measured transmitter output power, in dBm

$\mathbf{G_T}$ gain of the transmitting antenna, in dBi (EIRP)

1.7. Peak-to-Average Power Ratio

1.7.1. Test Setup



1. The DUT transmitter output port was connected to communication simulator with above setup.
2. Path loss for the measurement included.
3. Set DUT to transmit maximum power through communication simulator
4. Set the CCDF (Complementary Cumulative Distribution Function) option in the spectrum analyzer.
5. Spectrum Analyzer setting, RBW = 20MHz.
6. Recorded the maximum PAR level associated with a probability of 0.1% as Peak to Average Ratio.
7. All the measurement was done at low, mid, high channel for each band and different modulation.

1.7.2. Test Limit

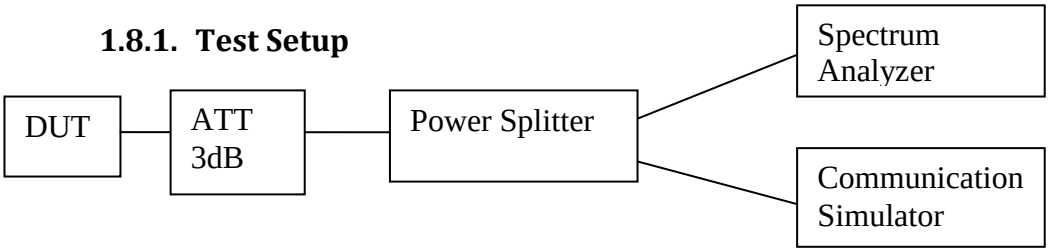
In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

1.7.3. Peak-to-Average Power Ratio – LTE Band 4 (1710-1755MHz)

NA

1.8. Occupied Bandwidth

1.8.1. Test Setup



1) The DUT transmitter output port was connected to communication simulator with above setup.
2) Path loss for the measurement included.
3) For LTE measurement, set DUT to transmit maximum power & full RB size through communication simulator.
4) For LTE measurement, set DUT to transmit maximum power through communication simulator.
5) Spectrum Analyzer setting, RBW is 1% of OBW and VBW is 3 times of RBW.
6) Measure & record -26dBc and 99% occupied bandwidth (BW).
7) All the measurement was done at low, mid, high channel for each band and different modulation.

1.8.2. Test Limit

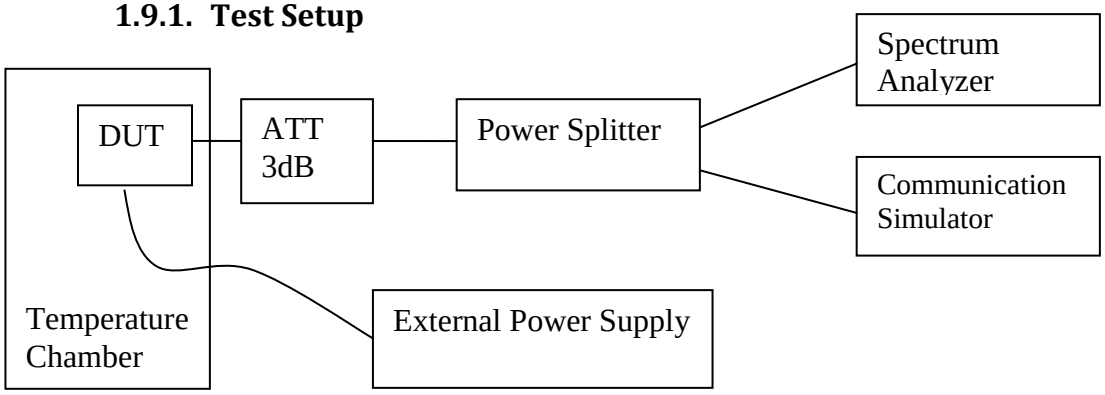
The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

1.8.3. Occupied Bandwidth – LTE Band 4 (1710-1755MHz)

NA

1.9. Frequency Stability

1.9.1. Test Setup



1) The DUT is placed in the temperature chamber and DUT is power up by external power supply to control the DC input voltage.
2) The temperature chamber could control the temperature and humidity and external power supply could control the test voltage range from minimum to maximum operating voltage.
3) Measured frequency error from the communication simulator by vary below step :
   i. Vary temperature of the temperature chamber from -30 ~ 50 deg C (10 deg C / Step) and set external supply voltage constant at nominal voltage.
   ii. Vary external supply voltage from minimum to maximum operation voltage support by DUT and set temperature chamber constant at room temp.
4) All the measurement was done at mid channel for each band.

1.9.2. Test Limit

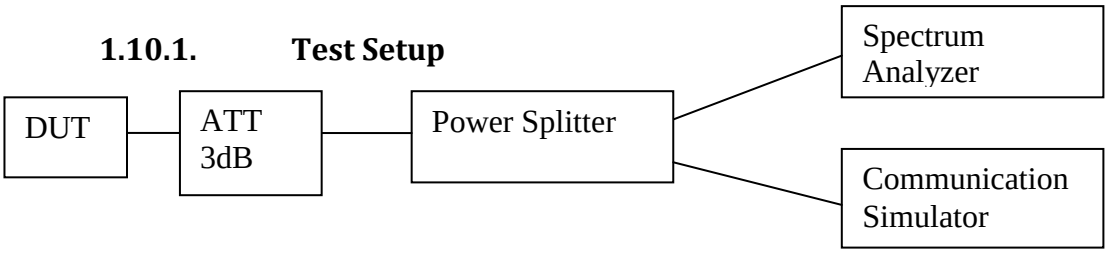
The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

1.9.3. Frequency Stability – LTE Band 4 (1710-1755MHz)

NA

1.10. Band Edge Conducted Spurious Emission

1.10.1. Test Setup



1) The DUT transmitter output port was connected to communication simulator with above setup.
2) Path loss for the measurement included.
3) Set DUT to transmit maximum power through communication simulator.
4) The band edges of lowest and highest channels with the highest RF powers were measured.
5) The center frequency of spectrum is the band edge frequency, span is 3MHz, RBW is 1~3% of EBW and VBW is at least 3 times of RBW
6) Record the maximum trace plot into the test report.

1.10.2. Test Limit

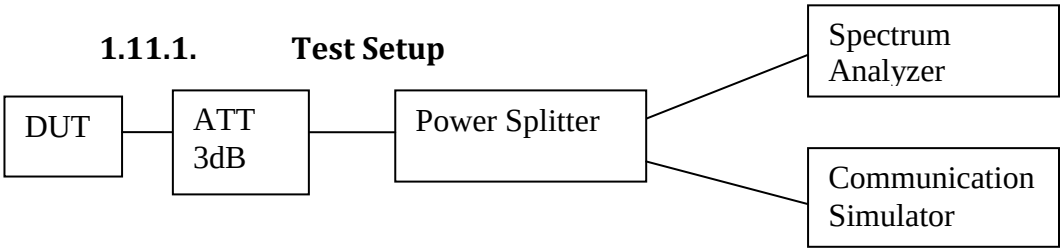
For operations in the 1710-1755 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}$ (P) dB. In the 1 megahertz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

1.10.3. Band Edge Conducted Spurious Emission – LTE Band 4 (1710-1755MHz)

NA

1.11. Conducted Spurious Emission

1.11.1. Test Setup



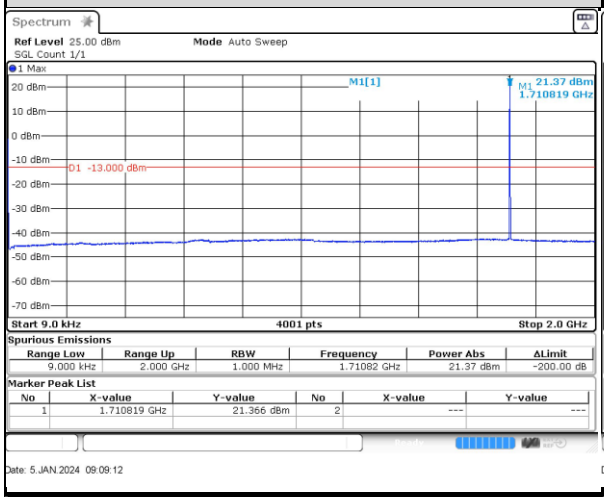
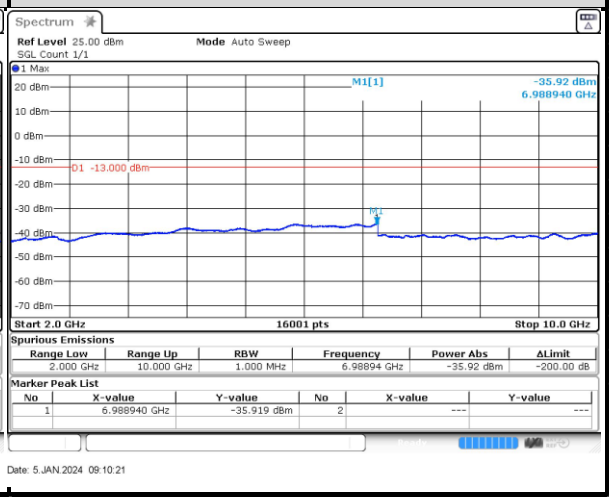
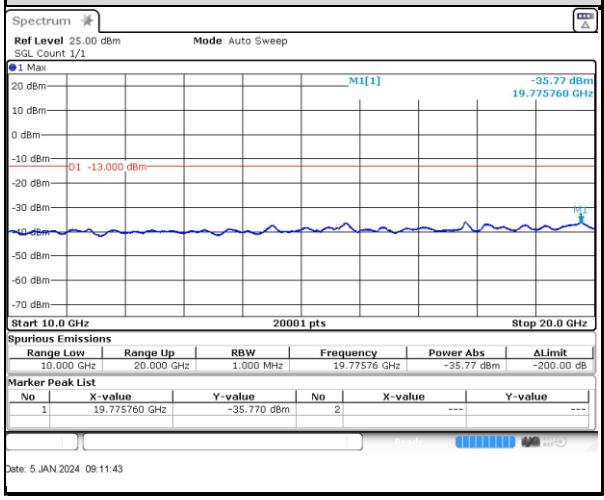
1) The DUT transmitter output port was connected to communication simulator with above setup.
2) Path loss for the measurement included.
3) Set DUT to transmit maximum power through communication simulator.
4) Spectrum Analyzer setting, RBW = 1 MHz, VBW = 3 MHz.
5) The spurious emission of lowest, middle and highest channels with the highest RF powers were measured.
6) Record the maximum trace plot into the test report.

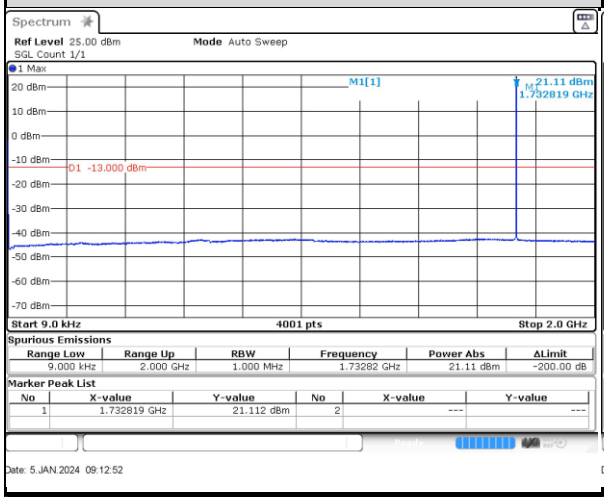
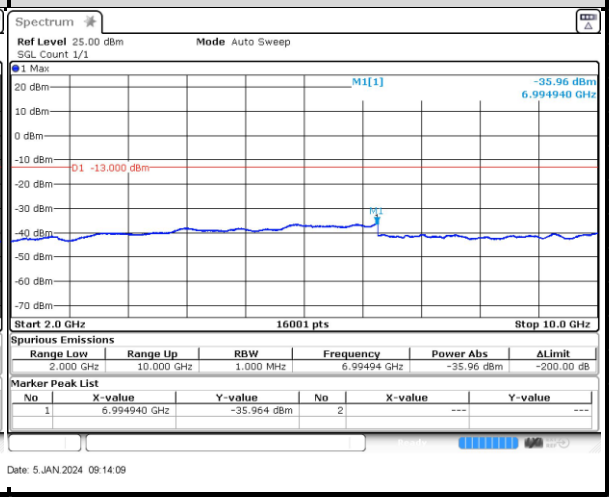
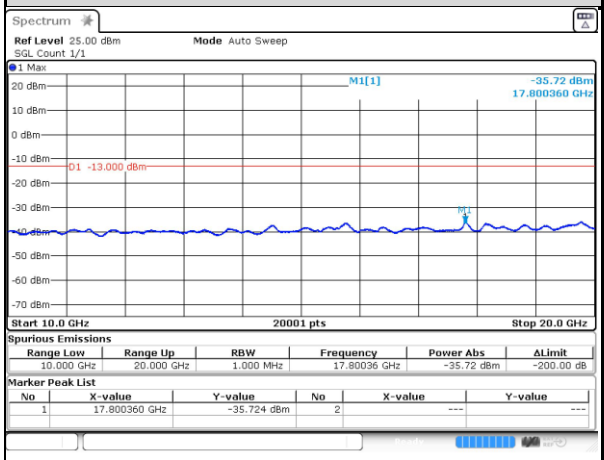
1.11.2. Test Limit

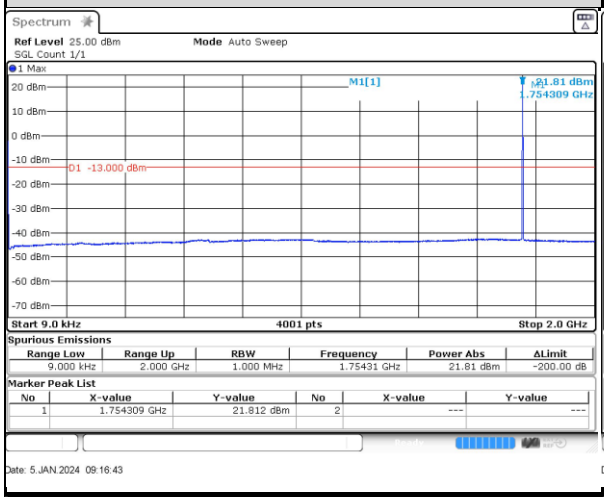
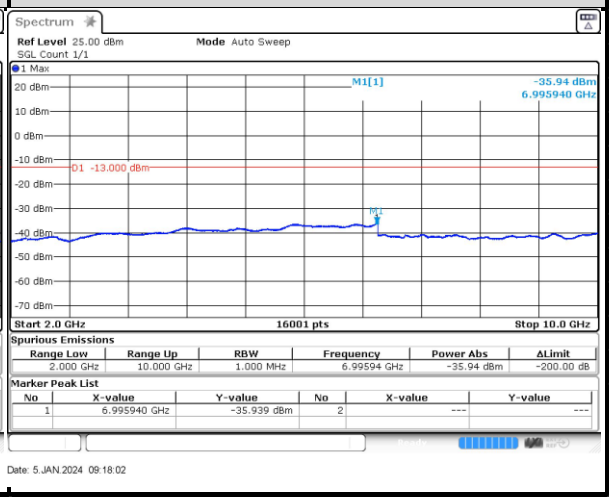
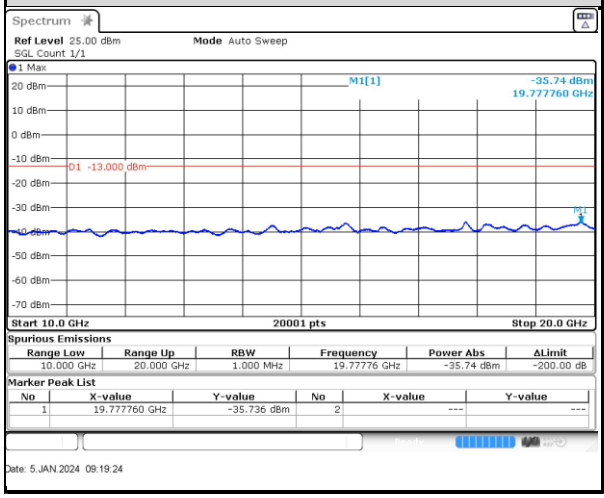
For operations in the 1710-1755 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}$ (P) dB. The measurement instrumentation is employing a resolution bandwidth of 1 megahertz or greater.

1.11.3. Conducted Spurious Emissions – LTE Band 4 (1710-1755MHz)

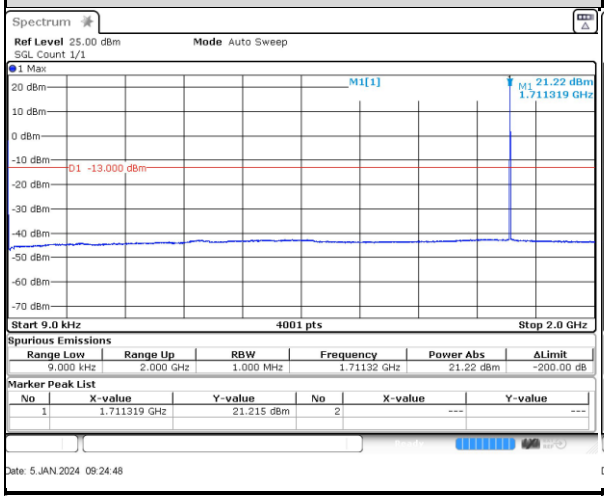
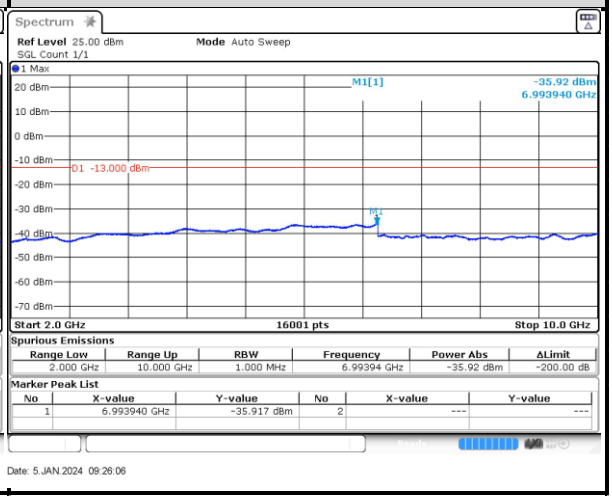
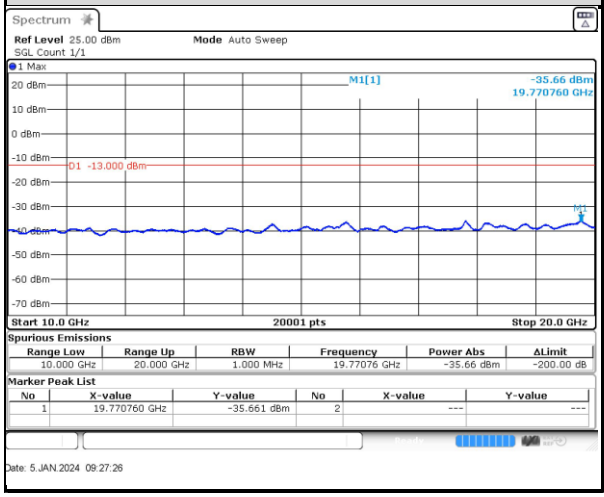
1.4MHz

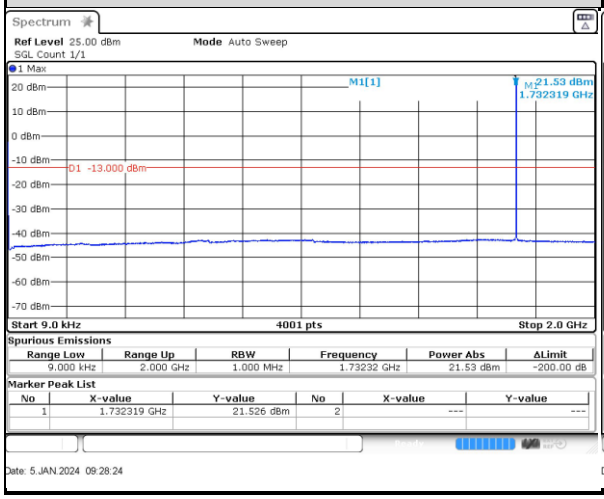
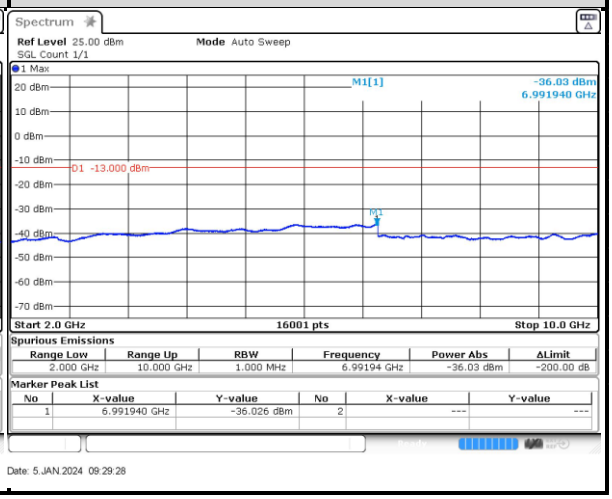
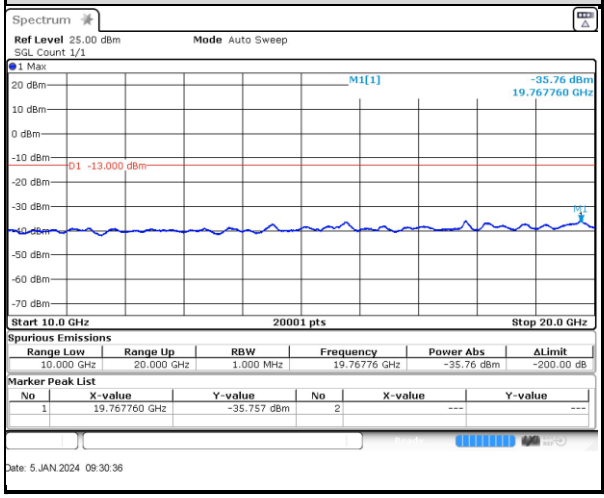
QPSK - Low Freq (1710.7 MHz)	
RB Size =1, RB Offset = 3	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

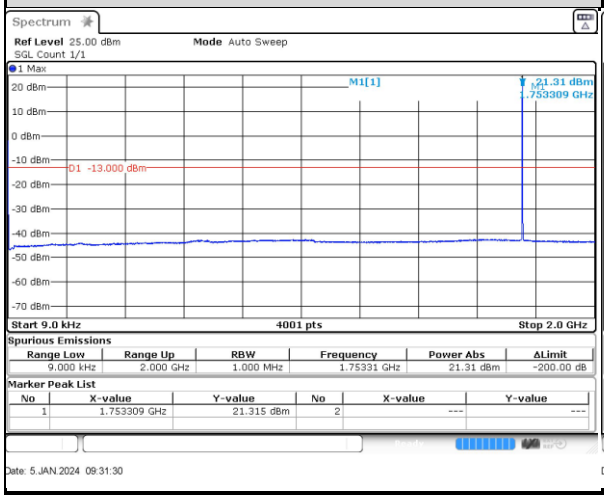
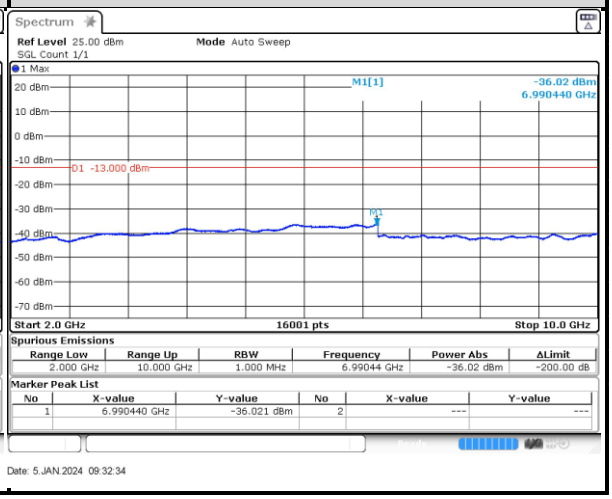
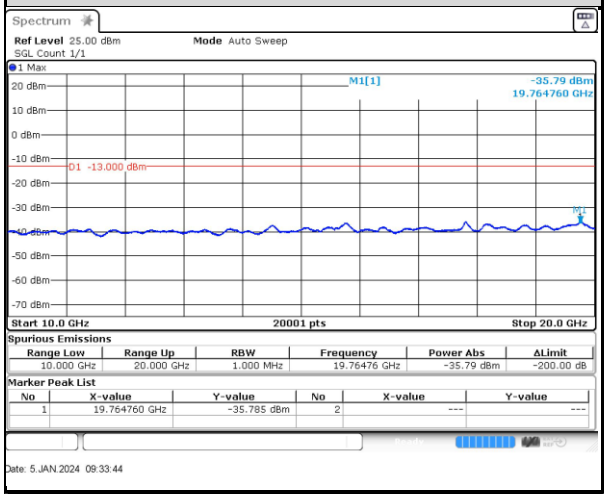
QPSK - Mid Freq (1732.5 MHz)	
RB Size =1, RB Offset = 3	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

QPSK - High Freq (1754.3 MHz)	
RB Size =1, RB Offset = 3	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

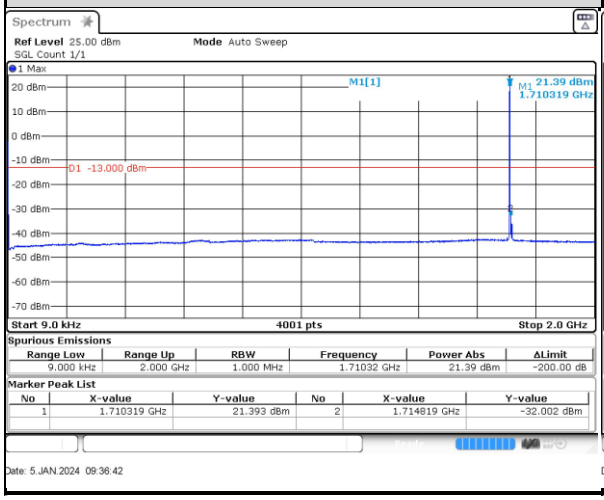
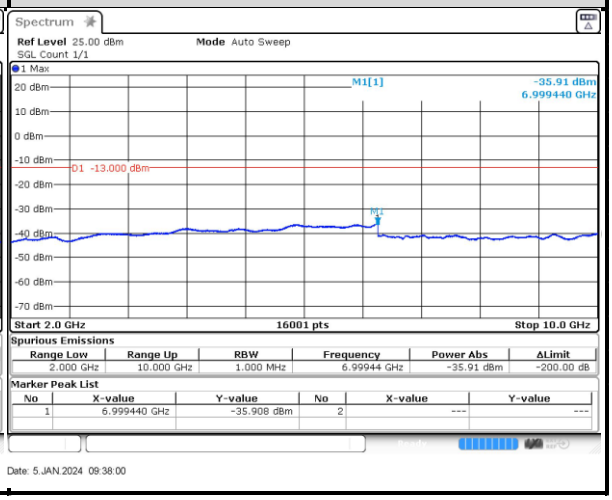
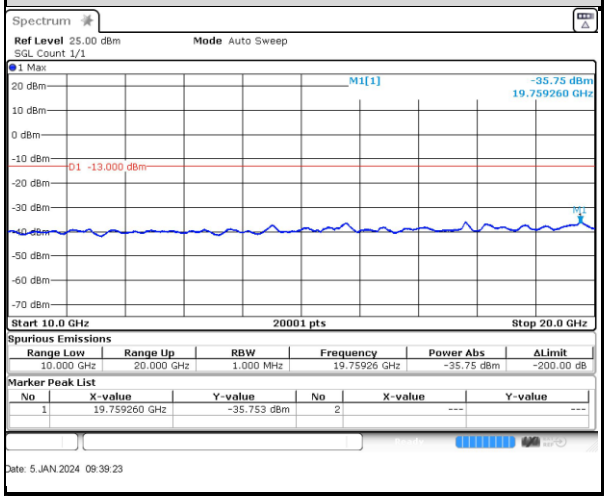
3MHz

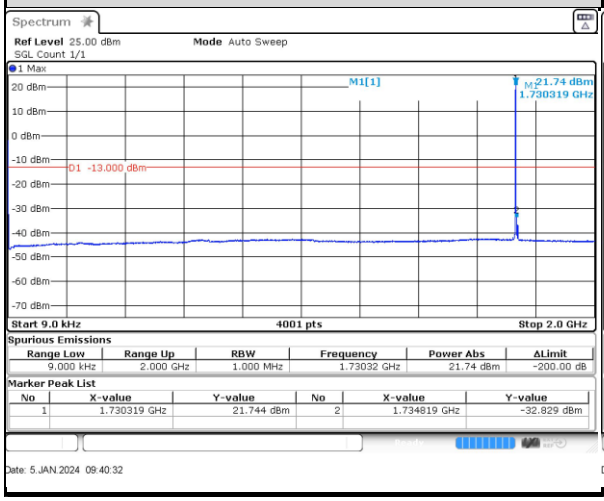
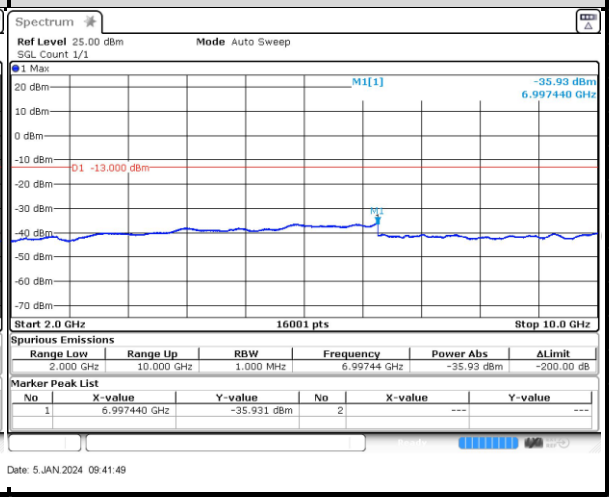
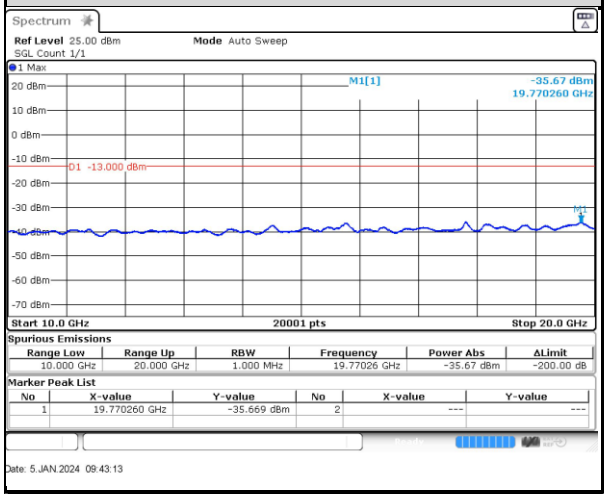
QPSK - Low Freq (1711.5 MHz)	
RB Size =1, RB Offset = 7	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

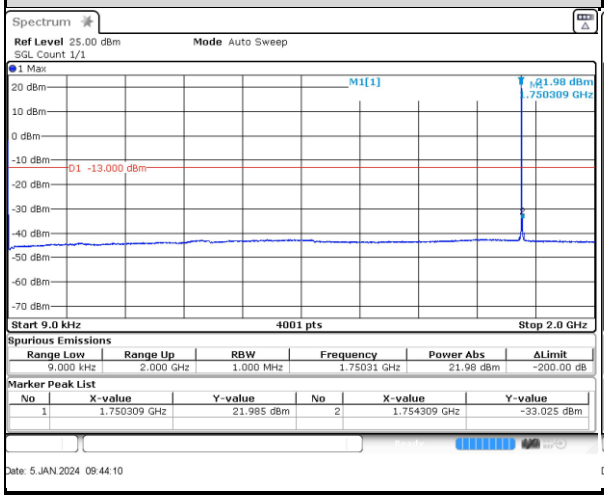
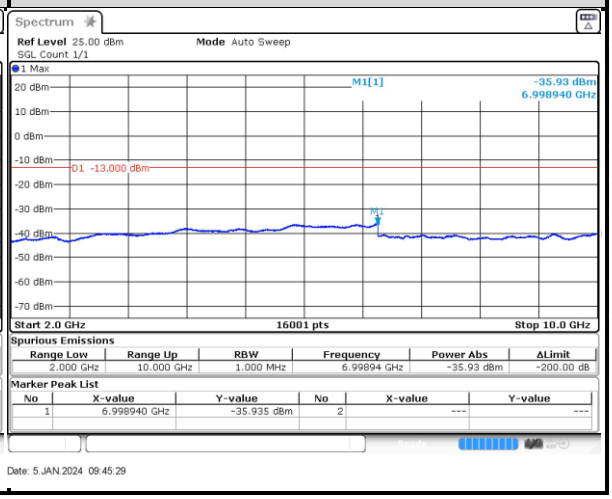
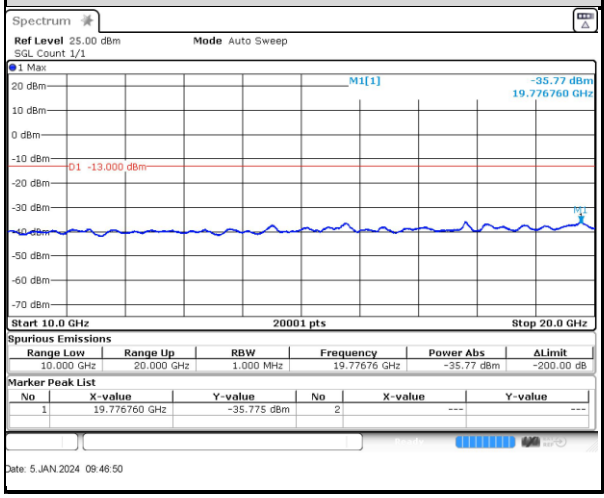
QPSK - Mid Freq (1732.5 MHz)	
RB Size =1, RB Offset = 7	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

QPSK - High Freq (1753.5 MHz)	
RB Size =1, RB Offset = 7	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

5MHz

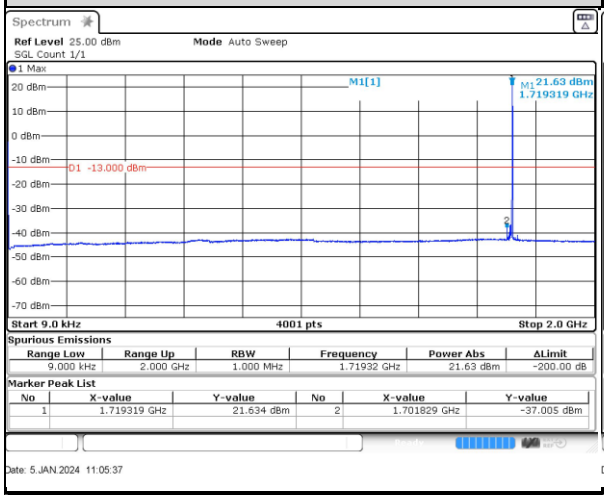
QPSK - Low Freq (1712.5 MHz)	
RB Size =1, RB Offset = 0	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

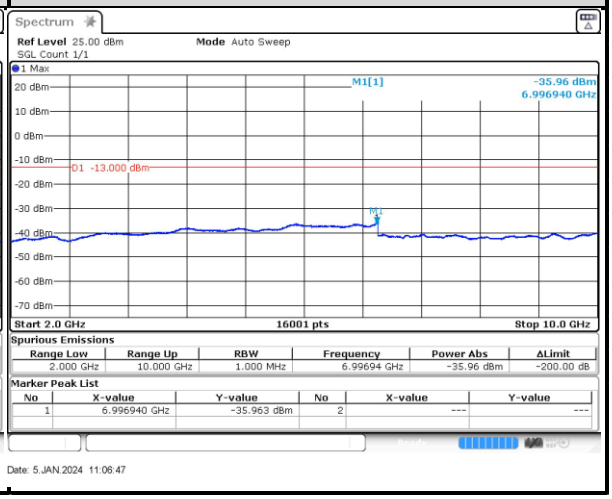
QPSK - Mid Freq (1732.5 MHz)	
RB Size =1, RB Offset = 0	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

QPSK - High Freq (1752.5 MHz)	
RB Size =1, RB Offset = 0	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

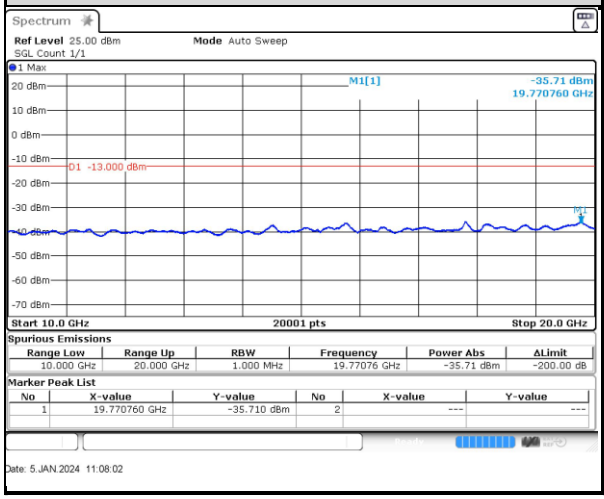
10MHz

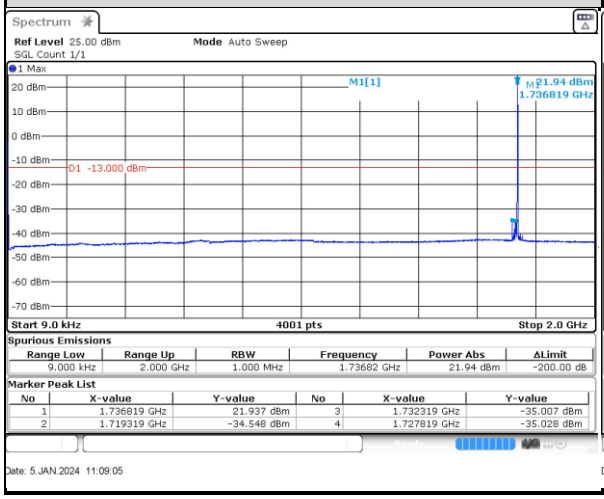
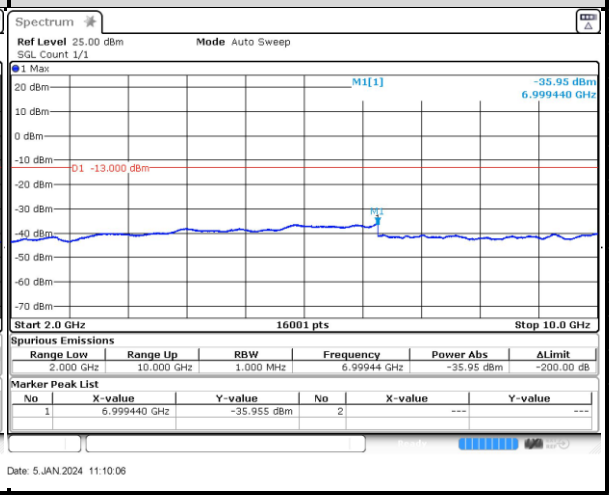
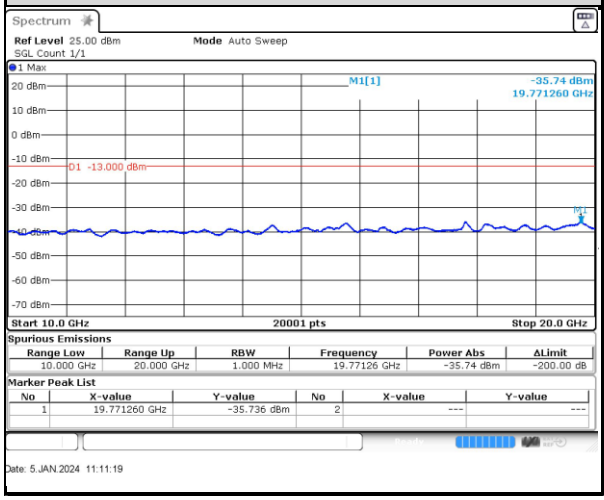
QPSK - Low Freq (1715.0 MHz)	
RB Size =1, RB Offset = 49	
9kHz ~ 2GHz	2GHz ~ 10GHz

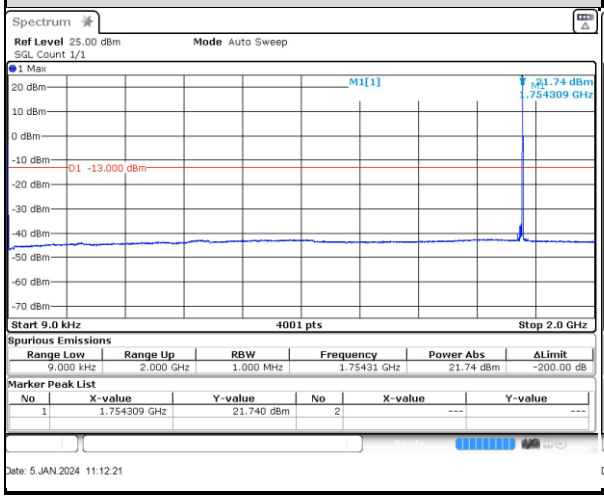
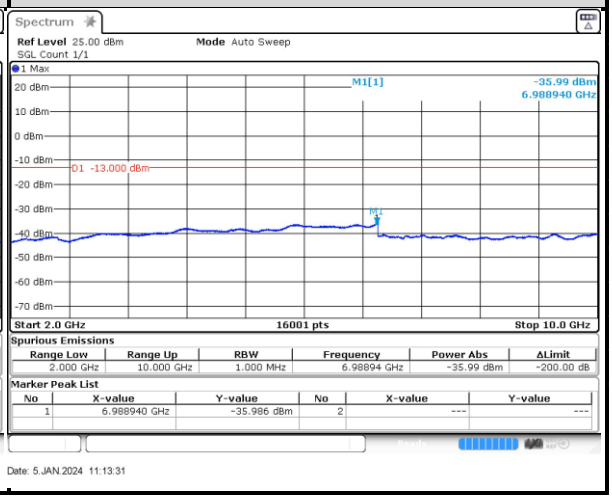
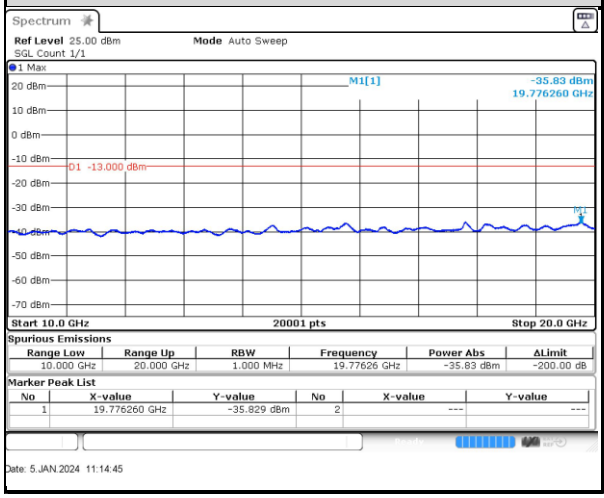




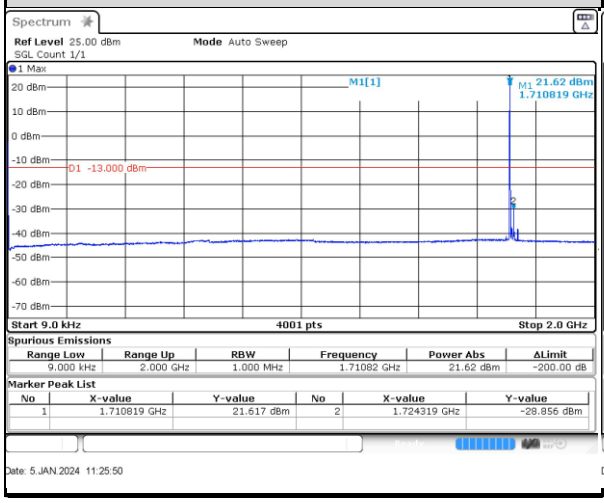
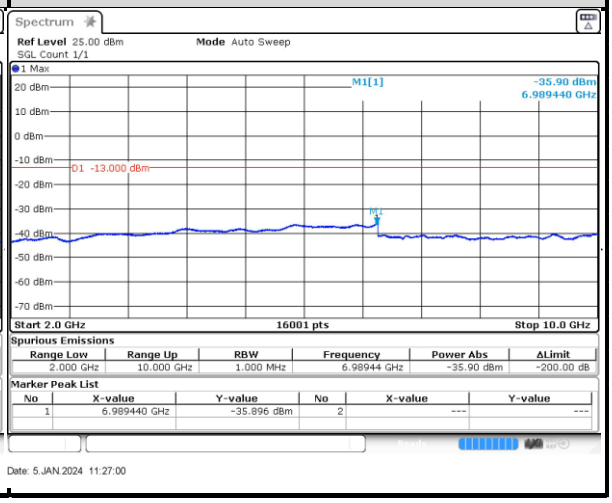
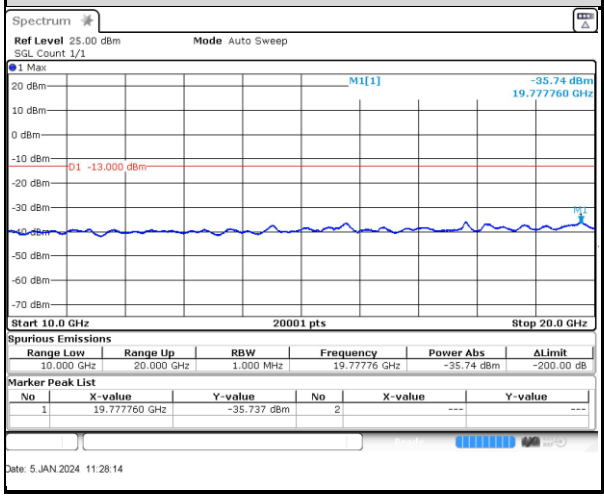
10GHz ~ 20GHz	

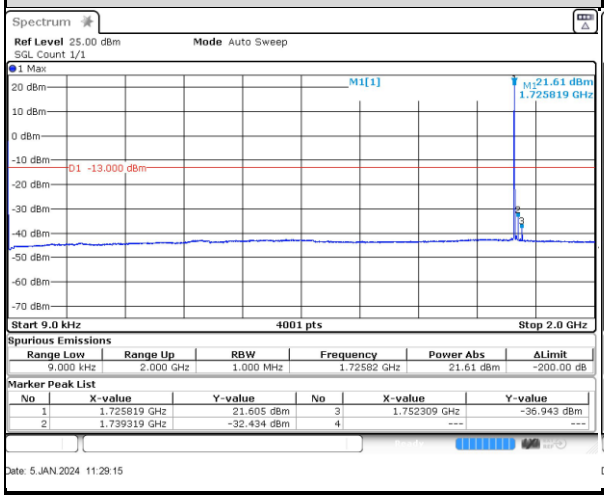
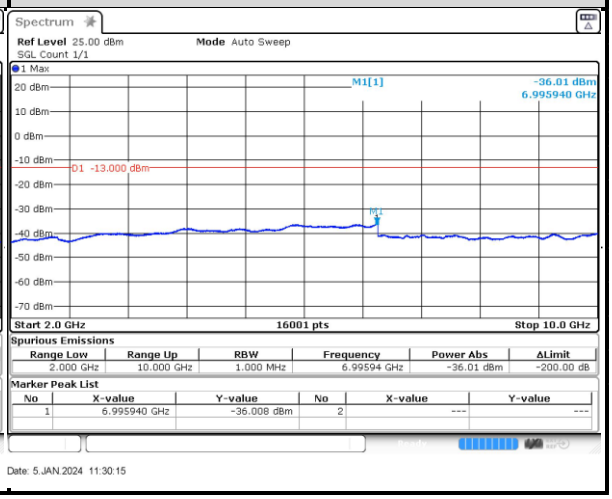
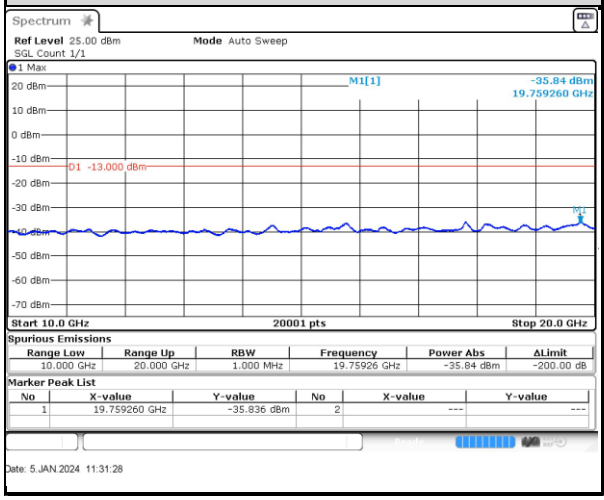


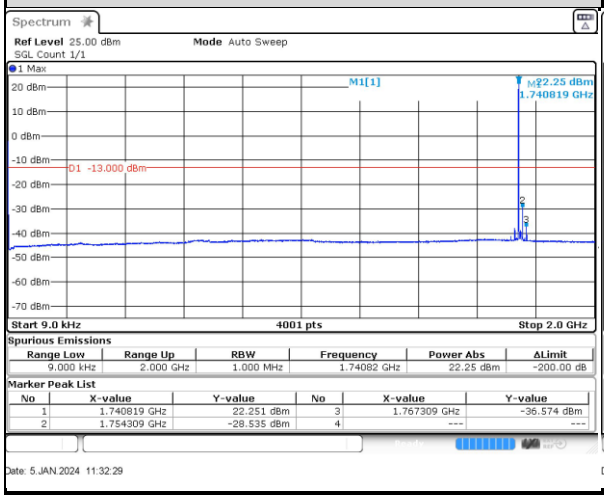
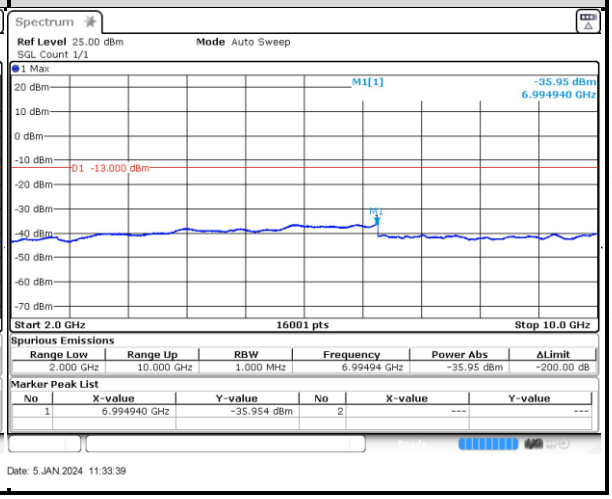
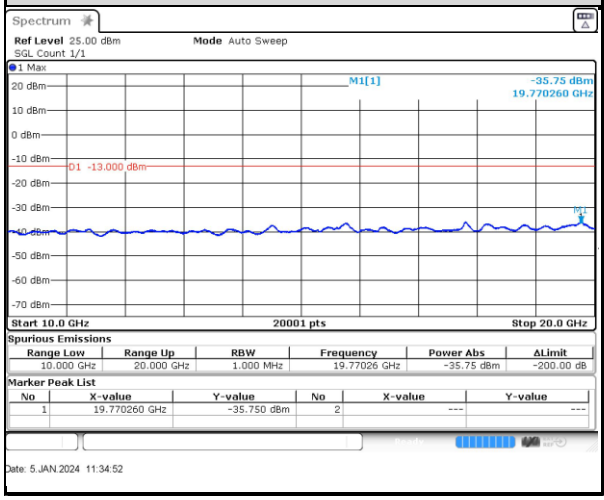
QPSK - Mid Freq (1732.5 MHz)	
RB Size =1, RB Offset = 49	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

QPSK - High Freq (1750.0 MHz)	
RB Size =1, RB Offset = 49	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

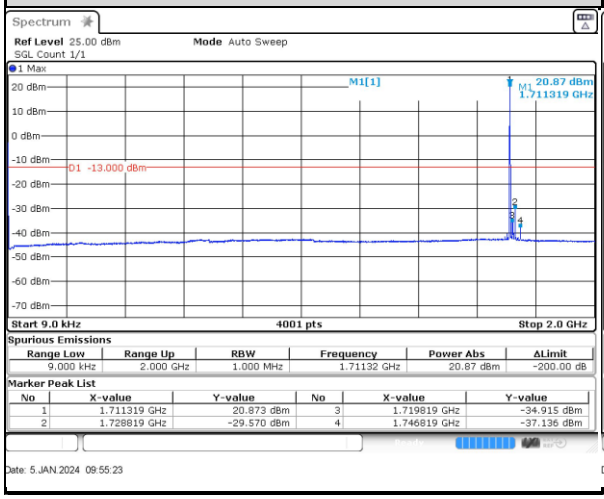
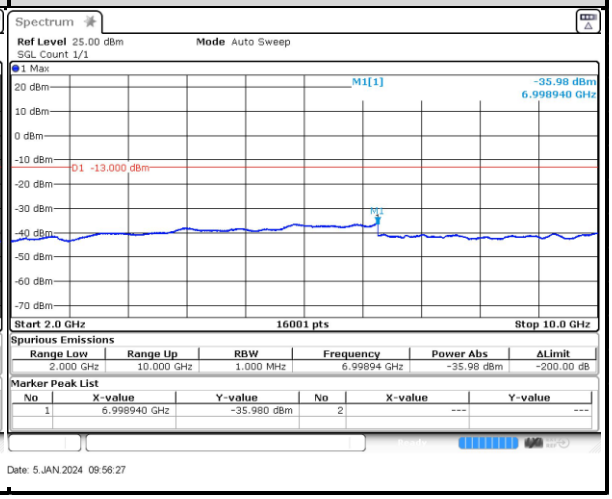
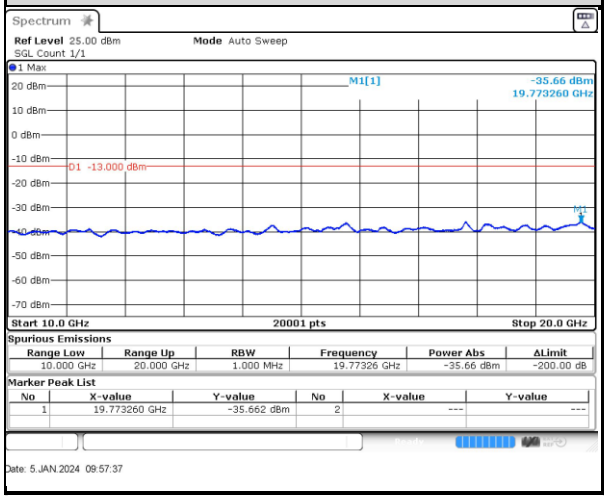
15MHz

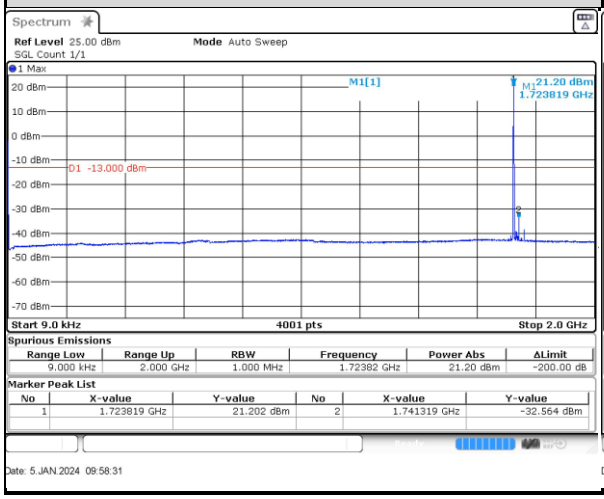
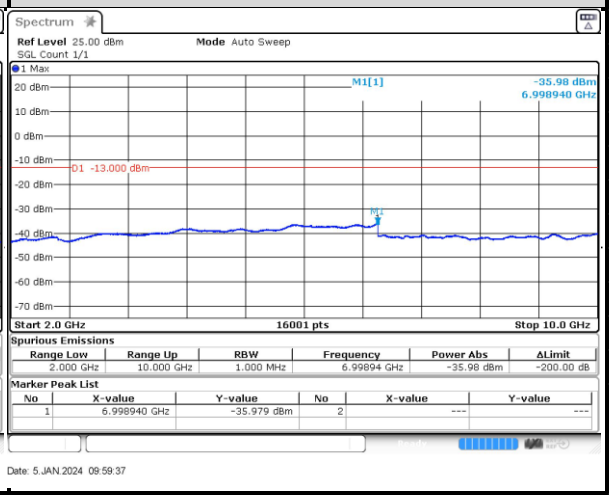
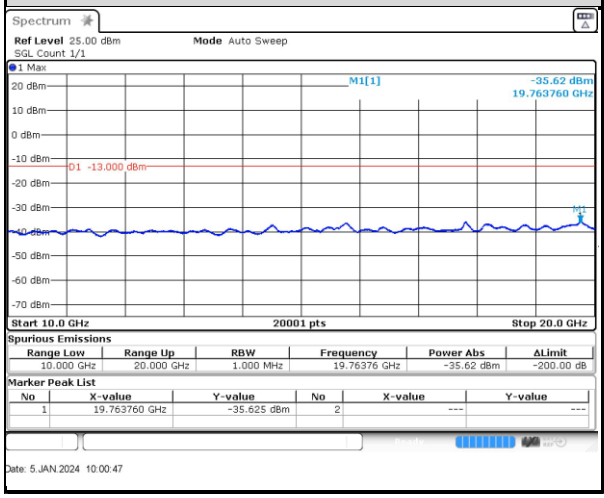
QPSK - Low Freq (1717.5 MHz)	
RB Size =1, RB Offset = 0	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

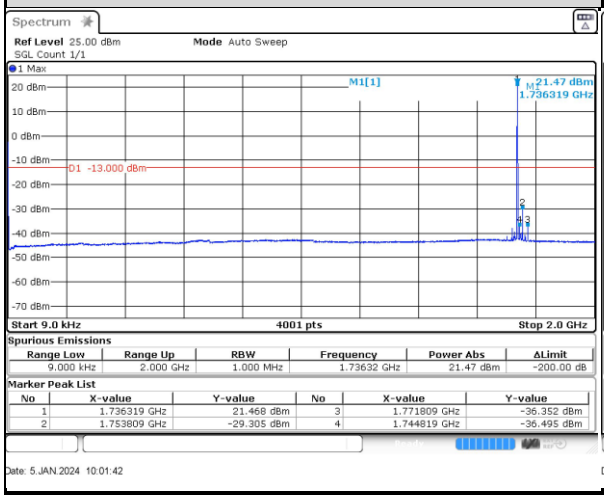
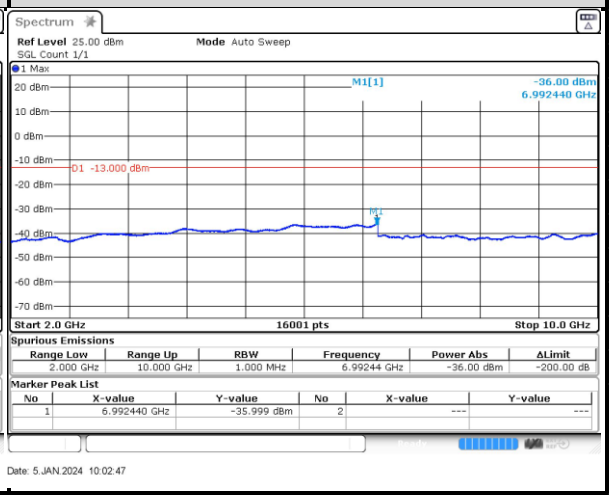
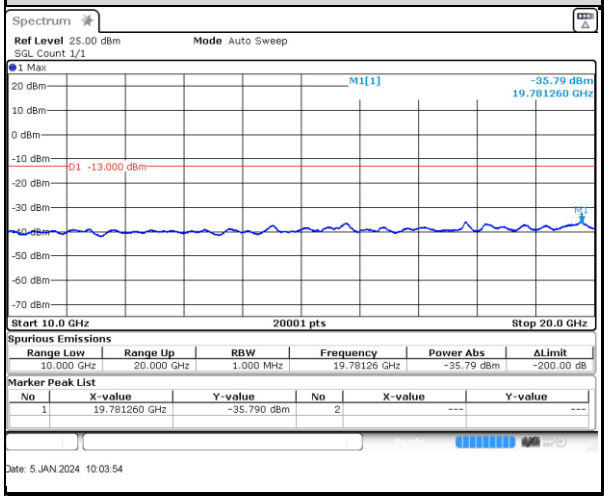
QPSK - Mid Freq (1732.5 MHz)	
RB Size =1, RB Offset = 0	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

QPSK - High Freq (1747.5 MHz)	
RB Size =1, RB Offset = 0	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

20MHz

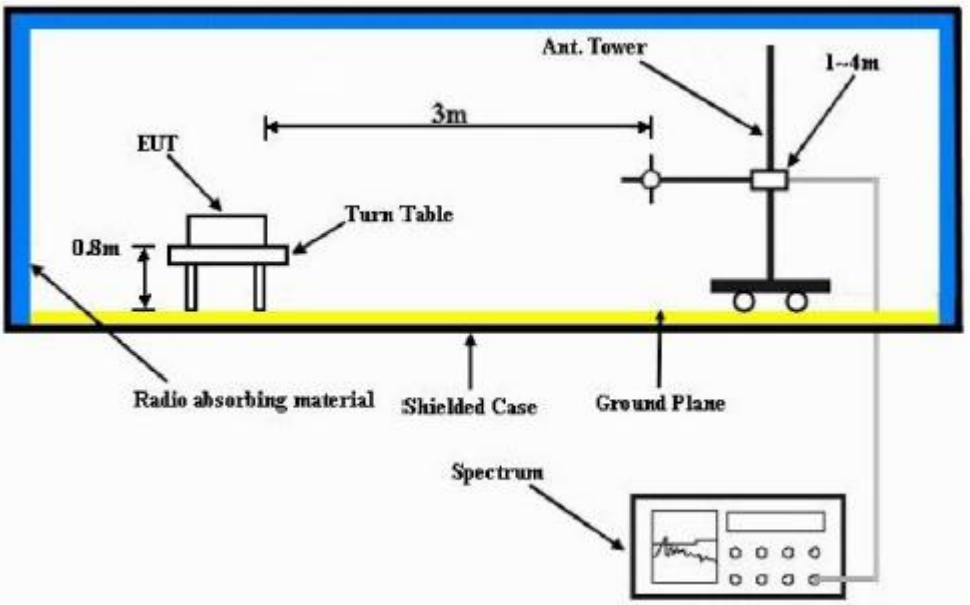
QPSK - Low Freq (1720.0 MHz)	
RB Size =1, RB Offset = 0	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

QPSK - Mid Freq (1732.5 MHz)	
RB Size =1, RB Offset = 0	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

QPSK - High Freq (1745.0 MHz)	
RB Size =1, RB Offset = 0	
9kHz ~ 2GHz	2GHz ~ 10GHz
	
10GHz ~ 20GHz	
	

1.12. Radiated Spurious Emission

1.12.1. Test Setup



1) The spectrum setting for scanning Radiated Emission below 1 GHz is RBW = 100 kHz, VBW = 300 kHz and above 1 GHz is RBW = 1MHz, VBW = 3MHz. Detector mode is positive peak.
2) In the semi-anechoic chamber, setup as illustrated above the EUT placed on the Turn Table at 0.8m height for below 1Ghz measurement and at 1.5m height for above 1GHz measurement, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
3) The substitution antenna is substituted for EUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.
4) Final Radiated Spurious Emission = “Read Value” + Measured substitution value.

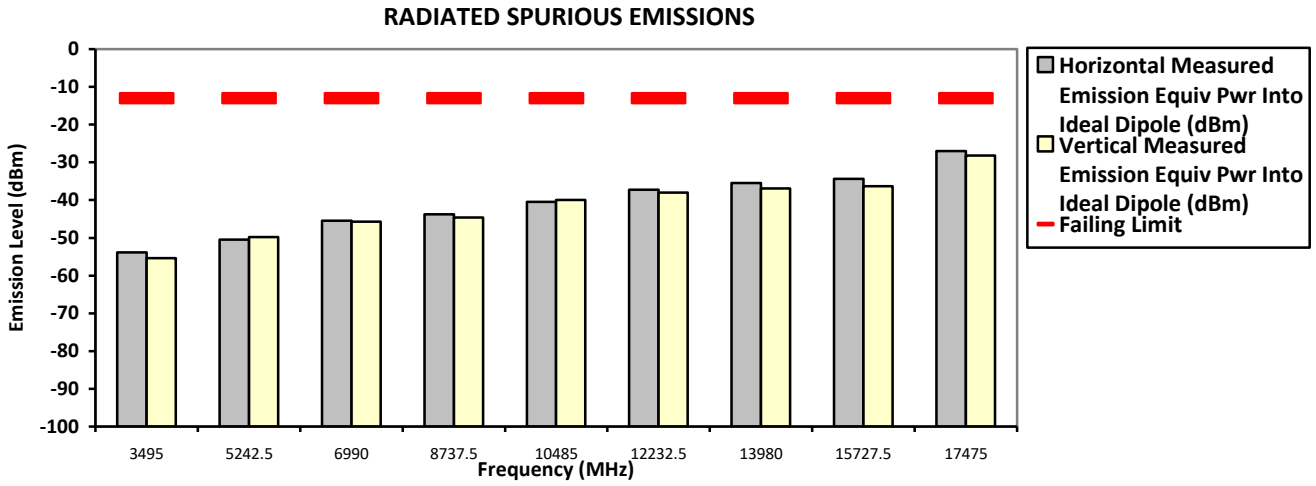
1.12.2. Test Limit

The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \log_{10}$ (P) dB. The emission limit equal to -13dBm.

1.12.3. Radiated Spurious Emission – LTE Band 4 (1710-1755MHz)

SAC Transmitter Radiated Emission:
Model Number: H55TGT9PW8AN **S/N: 437TZP0815, 437TZP0835, 437TZP0845**
SR:12464-EMC-00264
Battery Part No: NNTN9087A, NNTN9089B **Accy Part No: AN000296A01, NNTN9115A-C3, 3087791G01**
Test Mode: TX LTE (Band 4) Y-Plane
1747.500000 MHz (High) **Bandwidth 15MHz** **0.252 Watt(s) /Max Power**

Frequency (MHz)	Limit	Horizontal Measured Emission Equiv Pwr Into Ideal Dipole (dBm)	Vertical Measured Emission Equiv Pwr Into ideal Dipole (dBm)
3495.0000	-13.0000	-53.8343 **	-55.4067 **
5242.5000	-13.0000	-50.4429 **	-49.7879 **
6990.0000	-13.0000	-45.4642 **	-45.7384 **
8737.5000	-13.0000	-43.7733 **	-44.6155 **
10485.0000	-13.0000	-40.4724 **	-39.9428 **
12232.5000	-13.0000	-37.2231 **	-38.0236 **
13980.0000	-13.0000	-35.4501 **	-36.9063 **
15727.5000	-13.0000	-34.3375 **	-36.3038 **
17475.0000	-13.0000	-26.9915 **	-28.1730 **



The data presented here was taken using the substitution method as found in the ANSI C63.26-2015 document.
Motorola Penang EMC Lab - Test Performed by: Nazrin & Fuad **Thu, 18 Jan, 2024**

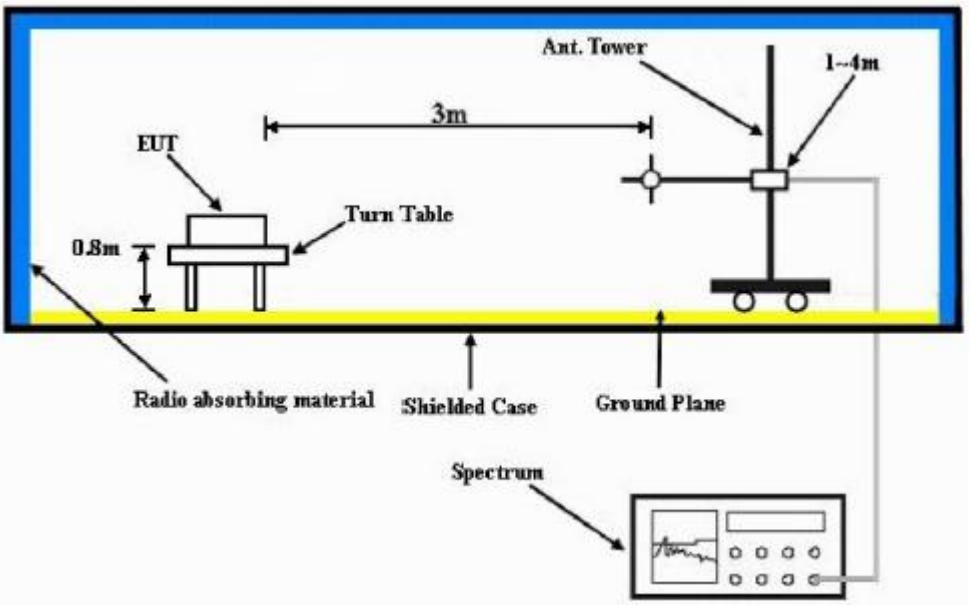
Remarks: ** Indicates the spurious emission could not be detected due to noise limitations or ambient.
***Pursuant to CFR 47 Part 2.1057 (c), emissions attenuated more than 20 dB below the permissible limit are not reported**
Temp(Deg): 23.7 Hum(%RH): 69.2

System MU: 4.03 dB

Remarks: Passed Results | **Marginal Results** | **Failed Results**

1.13. Equivalent Isotropically Radiated Power (EIRP)

1.13.1. Test Setup



1) The spectrum setting for scanning Radiated Emission below 1 GHz is RBW = 100 kHz, VBW = 300 kHz and above 1 GHz is RBW = 1MHz, VBW = 3MHz. Detector mode is RMS.
2) In the semi-anechoic chamber, setup as illustrated above the EUT placed on the Turn Table at 0.8m height for below 1Ghz measurement and at 1.5m height for above 1GHz measurement, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.
3) The substitution antenna is substituted for EUT at the same position and signals generator (S.G) export the CW signal to the substitution antenna via a TX cable. The receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum radiation power. Record the power level of maximum radiation power from spectrum. So, the measured substitution value = Ref level of S.G + TX cables loss – Substituted Antenna Gain.
4) EIRP = “Read Value” + Measured substitution value.

1.13.2. Test Limit

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

1.13.3. Equivalent Isotropically Radiated Power (EIRP) - LTE Band 4 (1710-1755MHz)

NA

--End of Test Report--