

RF Test Report

Applicant : Getac Technology Corporation
Product Name : 5G/LTE data card
Trade Name : Telit
Model Number : FN990A28
Applicable Standard : FCC 47 CFR PART 22H
FCC 47 CFR PART 24E
FCC 47 CFR PART 27
FCC 47 CFR PART 90R
FCC 47 CFR PART 96
ANSI C63.26 2015
Received Date : Jul. 19, 2024
Test Period : Aug. 19, 2024 ~ Sep. 03, 2024
Issued Date : Oct. 25, 2024

Issued by

Eurofins E&E Wireless Taiwan Co., Ltd.
No. 140-1, Changan Street, Bade District,
Taoyuan City 334025, Taiwan (R.O.C.)
Tel : +886-3-2710188 / Fax : +886-3-2710190



Taiwan Accreditation Foundation accreditation number: 1330
Frequency Range: 9 kHz to 325 GHz
Bade test site :
Test Firm Registration Number: 226252
Test Firm Designation Number: TW0010
Wugu test site :
Test Firm Registration Number: 191812
Test Firm Designation Number: TW0034

Note:

- 1.The test results are valid only for samples provided by customers and under the test conditions described in this report.
- 2.This report shall not be reproduced except in full, without the written approval of Eurofins E&E Wireless Taiwan Co., Ltd.
- 3.The relevant information is provided by customers in this test report. According to the correctness, appropriateness or completeness of the information provided by the customer, if there is any doubt or error in the information which affects the validity of the test results, the laboratory does not take the responsibility.

Revision History

Rev.	Issued Date	Description	Revised by
00	Oct. 25, 2024	Initial Issue	Snow Wang

Verification of Compliance

Applicant : Getac Technology Corporation

Product Name : 5G/LTE data card

Trade Name : Telit

Model Number : FN990A28

FCC ID : QYLFN990Z12

Applicable Standard : FCC 47 CFR PART 22H
FCC 47 CFR PART 24E
FCC 47 CFR PART 27
FCC 47 CFR PART 90R
FCC 47 CFR PART 96
ANSI C63.26 2015

Test Result : Complied

Performing Lab. : Eurofins E&E Wireless Taiwan Co., Ltd.
No. 140-1, Changan Street, Bade District,
Taoyuan City 334025, Taiwan (R.O.C.)
Tel : +886-3-2710188 / Fax : +886-3-2710190
Taiwan Accreditation Foundation accreditation number: 1330



Eurofins E&E Wireless Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Eurofins E&E Wireless Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Approved By : _____

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1 General Information

1.1. Summary of Test Result

FCC Rule	Description	Result
§2.1046	Conducted Output Average Power	N/A (Note 1)
§22.913 §24.232 §27.50 §90.542(Part 90R) §96.41(b)	Equivalent Isotropic Radiated Power / Equivalent Radiated Power	N/A (Note 1)
§2.1055 §22.355 §24.235 §27.54	Frequency Stability	N/A (Note 1)
§2.1049	Emission Bandwidth & Occupied Bandwidth	N/A (Note 1)
§24.232 §27.50 §96.41(g)	Peak to Average Power Ratio	N/A (Note 1)
§2.1051 §22.917 §24.238 §27.53 §90.543(Part 90R) §96.41(e)	Band Edge	N/A (Note 1)
§2.1051 §22.917 §24.238 §27.53 §90.543(Part 90R) §96.41(e)	Conducted Spurious Emissions	N/A (Note 1)
§2.1053 §22.917 §24.238 §27.53 §90.691 §90.543(Part 90R) §96.41(e)	Radiated Spurious Emissions	Pass (Note 2)

Note 1: No need for verification.

Note 2: Only verify the Simultaneous Transmission.

Decision Rule

- ☒ Uncertainty is not included.
- ☐ Uncertainty is included.

1.2. Testing Location

Lab Name: Eurofins E&E Wireless Taiwan Co., Ltd.

Site Address: ☐ No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.)

Site Address: ☒ No. 2, Wuquan 5th Rd. Wugu Dist., New Taipei City, Taiwan (R.O.C.)

1.3. Measurement Uncertainty

Parameter	Uncertainty			
	96601-BD	96603-BD	96602-WG	96603-WG
Radiated Emission	4.9 dB	4.9 dB	4.9 dB	4.9 dB

1.4. Test Site Environment

Items	Required (IEC 68-1)	Interval(*)
Temperature (°C)	15-35	20-30
Humidity (%RH)	25-75	45-75
Barometric pressure (mbar)	860-1060	990-1005

(*)The measurement ambient temperature is within this range.

2 EUT Description

The product specifications of the EUT presented in the report are declared by the manufacturer who shall take full responsibility for the authenticity(except E.R.P. /E.I.R.P., Occupied Bandwidth, Emission Designator).

Applicant	Getac Technology Corporation 5F.,Building A,No.209,Sec.1 Nangang.,Rd., Taipei City, 11568, Taiwan		
Product Name	5G/LTE data card		
Trade Name	Telit		
Model Number	FN990A28		
FCC ID	QYLFN990Z12		
Host Information	Product Name: Tablet Trade Name: Getac Model Name: ZX10, ZX10-Ex, ZX10G2, ZX10-210, ZX10-220, ZX10Y(Y= 10 characters, Y can be 0 to 9, A to Z, a to z, “/”, “\”, “-”, “_” or blank for marketing purpose)) (All models are electrically identical, different model names are for marketing purpose.)		
IMEI No.	352382410008130		
Operate Band	Frequency Range (MHz)	Modulation	Channel Bandwidth
LTE Band 2	UL: 1850 ~ 1910	QPSK, 16QAM, 64QAM, 256QAM	1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz
	DL: 1930 ~ 1990		
LTE Band 4	UL: 1710 ~ 1755		1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz
	DL: 2110 ~ 2155		
LTE Band 5	UL: 824 ~ 849		1.4 MHz, 3 MHz, 5 MHz, 10 MHz
	DL: 869 ~ 894		
LTE Band 7	UL: 2500 ~ 2570		5 MHz, 10 MHz, 15 MHz, 20 MHz
	DL: 2620 ~ 2690		
LTE Band 12	UL: 699 ~ 716		1.4 MHz, 3 MHz, 5 MHz, 10 MHz
	DL: 728 ~ 746		
LTE Band 13	UL: 777 ~ 787		5 MHz, 10 MHz
	DL: 746 ~ 756		
LTE Band 14	UL: 788 ~ 798		5 MHz, 10 MHz
	DL: 758 ~ 768		
LTE Band 17	UL: 704 ~ 716		5 MHz, 10 MHz
	DL: 734 ~ 746		
LTE Band 25	UL: 1850 ~ 1915		1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz
	DL: 1930 ~ 1995		
LTE Band 26	UL: 824 ~ 849		1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz
	DL: 869 ~ 894		
LTE Band 30	DL: 2350 ~ 2360		5 MHz, 10 MHz
LTE Band 38	UL/DL: 2570 ~ 2620		5 MHz, 10 MHz, 15 MHz, 20 MHz
LTE Band 41	UL/DL: 2496 ~ 2690		5 MHz, 10 MHz, 15 MHz, 20 MHz
LTE Band 42	UL/DL: 3400~ 3600		5 MHz, 10 MHz, 15 MHz, 20 MHz

Operate Band	Frequency Range (MHz)	Modulation	Channel Bandwidth			
LTE Band 43	UL/DL: 3600~ 3800	QPSK, 16QAM, 64QAM, 256QAM	5 MHz, 10 MHz, 15 MHz, 20 MHz			
LTE Band 48	UL/DL: 3550 ~ 3700		5 MHz, 10 MHz, 15 MHz, 20 MHz			
LTE Band 66	UL: 1710 ~ 1780		1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz			
	DL: 2110 ~ 2200					
LTE Band 71	UL: 663 ~698		5 MHz, 10 MHz, 15 MHz, 20 MHz			
	DL: 617 ~ 652					
Antenna information	Antenna	Max. Gain (dBi)				
		Model	Type	MIMO1	MIMO2	
	Main	422GB1100001	PIFA Antenna	LTE Band 2	3.07	
				LTE Band 4	2.63	
				LTE Band 5	1.83	
				LTE Band 7	1.14	
				LTE Band 12	1.5	
				LTE Band 13	1.84	
				LTE Band 14	2.19	
				LTE Band 17	1.33	
				LTE Band 25	3.25	
				LTE Band 26	2.19	
				LTE Band 38	1.17	
				LTE Band 41	1.66	
				LTE Band 66	2.90	
				LTE Band 71	1.97	
	MIMO1	422GB1100004	PIFA Antenna	LTE Band 42	0.39	
				LTE Band 43	0.85	
				LTE Band 48	0.85	
	MIMO2	422GB1100005	PIFA Antenna	LTE Band 42	0.47	
				LTE Band 43	0.94	
				LTE Band 48	0.94	
Operate Temp. Range	-10 ~ 50 °C					
EUT Power Rating	3.3 Vdc					

EUT Modify Description :

Modify Description:

- 1.Add host model: ZX10, ZX10-Ex, ZX10G2, ZX10-210, ZX10-220, ZX10Y(Y= 10 characters, Y can be 0 to 9, A to Z, a to z, “/”, “\”, “-”, “_” or blank for marketing purpose)).
- 2.Change antenna.

After replacing the antenna, part of the gain is greater than the original antenna.

After our evaluation, the radiated emissions Above 1GHz (Band 48) and simultaneous transmitter noise emissions need to be retested.

For other test data, please refer to the original report.

2.1. Mode of Operation

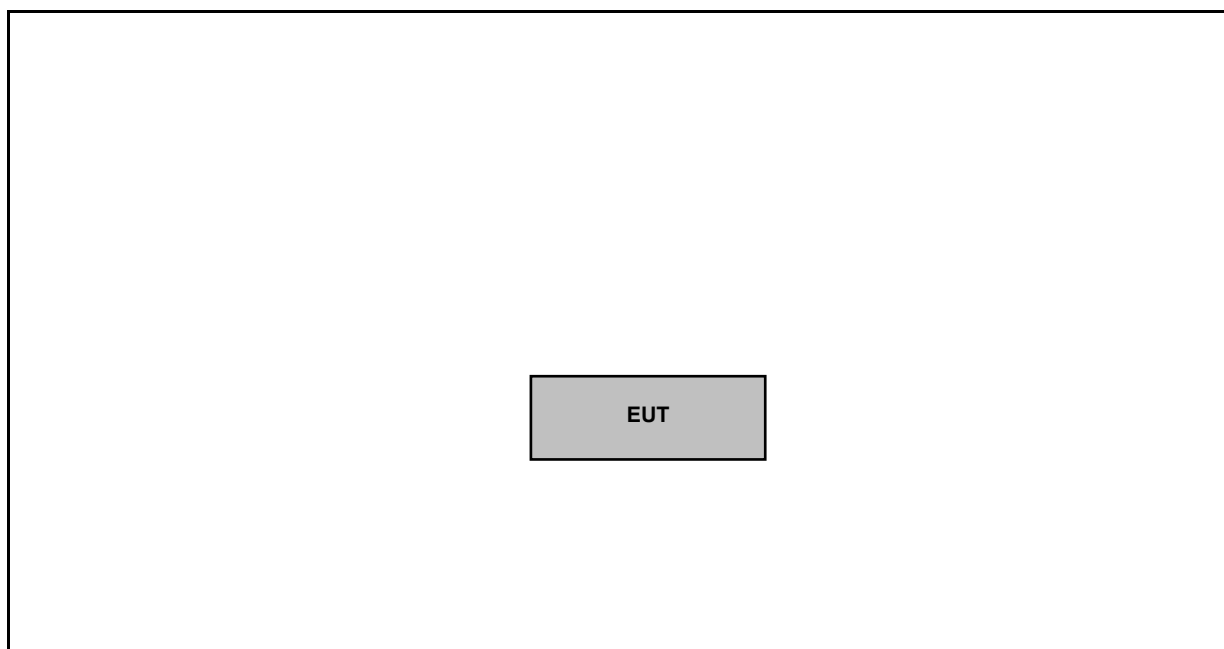
Eurofins has verified the construction and function in typical operation. All the test modes were carried out with the EUT in normal operation, which was shown in this test report and defined as:

Test Mode
Transmit Mode

2.2. EUT Test Step

1	Setup the EUT shown on "Configuration of Test System Details".
2	Turn on the power of all equipment.
3	EUT run test program test.

2.3. Configuration of Test System Details



2.4. Test Instruments

For Radiated Emissions

Test Period: August 19, 2024 ~ Sep. 3, 2024

Testing Engineer: Marin Lee

Radiation test sites		Semi Anechoic Room 96602-WG				
Use	Equipment	Manufacturer	Model Number	Serial Number	Cal. Date	Cal. Period
☒	Broadband Horn Antenna (1 GHz~18 GHz)	RF SPIN	DRH18-E	210305A18ES	Feb. 22, 2024	1 year
☒	Broadband Horn Antenna (15 GHz~40 GHz)	Schwarzbeck Mess-Elektronik	BBHA9170	01133	Jan. 18, 2024	1 year
☒	Spectrum Analyzer (10 Hz~44 GHz)	KEYSIGHT	N9020B	MY60112362	Jan. 29, 2024	1 year
☒	Universal Radio Communication Tester	R&S	CMU200	112387	Mar. 22, 2024	1 year
☒	Radio Communication Analyzer	Anritsu	MT8821C	6272374573	Jan. 5, 2024	1 year
☒	Radio Communication Test System	Anritsu	MT8000A	6272368745	Jan. 5, 2024	1 year
☒	UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MY59020225	Mar. 6, 2024	1 year
☒	Pre-Amplifier	EMCI	EMC118A45SE	980822	Nov. 29, 2023	1 year
☒	Pre-Amplifier	EMCI	EMC184045SE	980861	Dec. 21, 2023	1 year
☒	Coaxial Cable (1 GHz~18 GHz)	EMCI	EMC104-SM-SM-1000	211026	Nov. 13, 2023	1 year
☒	Coaxial Cable (1 GHz~18 GHz)	EMCI	EMC104-SM-SM-2000	211035	Nov. 13, 2023	1 year
☒	Coaxial Cable (1 GHz~18 GHz)	EMCI	EMC104-SM-SM-8000	211036	Nov. 13, 2023	1 year
☒	Coaxial Cable (18 GHz~40 GHz)	EMCI	EMC101G-KM-KM-600	211211	Jan. 16, 2024	1 year
☒	Coaxial Cable (18 GHz~40 GHz)	EMCI	EMC101G-KM-KM-2000	211210	Jan. 16, 2024	1 year
☒	Coaxial Cable (18 GHz~40 GHz)	EMCI	EMC101G-KM-KM-6000	211209	Jan. 16, 2024	1 year
☒	Highpass Filter	Warison	WFIL-H3000-20000F	WR4BBFWC2B1	Nov. 13, 2023	1 year
☒	Highpass Filter	Warison	WFIL-H6000-26500F	WR4BBFWC4B1	Nov. 13, 2023	1 year
☒	Highpass Filter	Warison	WFIL-H8000-26000F	001	Nov. 13, 2023	1 year
☒	Software	R_RAM	V1.3	N/A	N.C.R.	---

Note: N.C.R. = No Calibration Request

3 Measurement Procedure

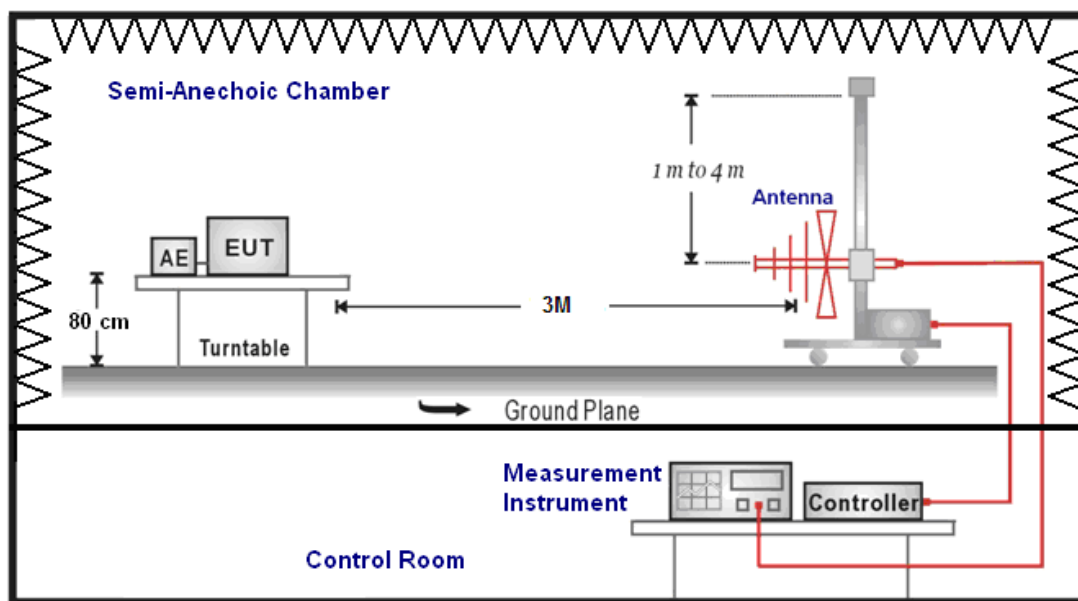
3.1. Radiated Emission Test

■ Limit

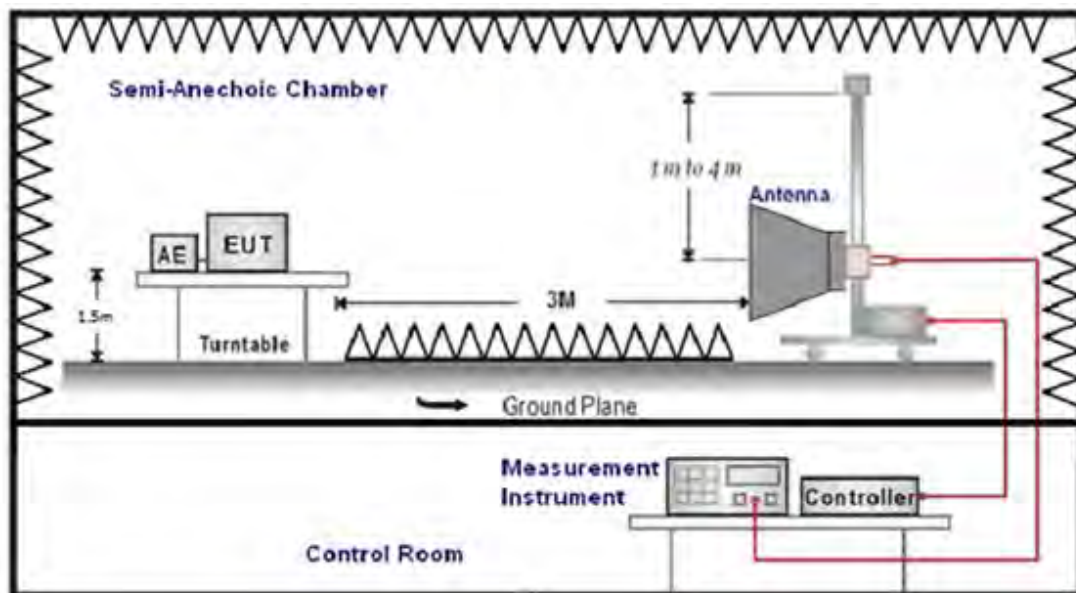
The power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least $43 + 10 \log_{10}(P)$ dB. The limit of emission equal to -13 dBm

■ Setup

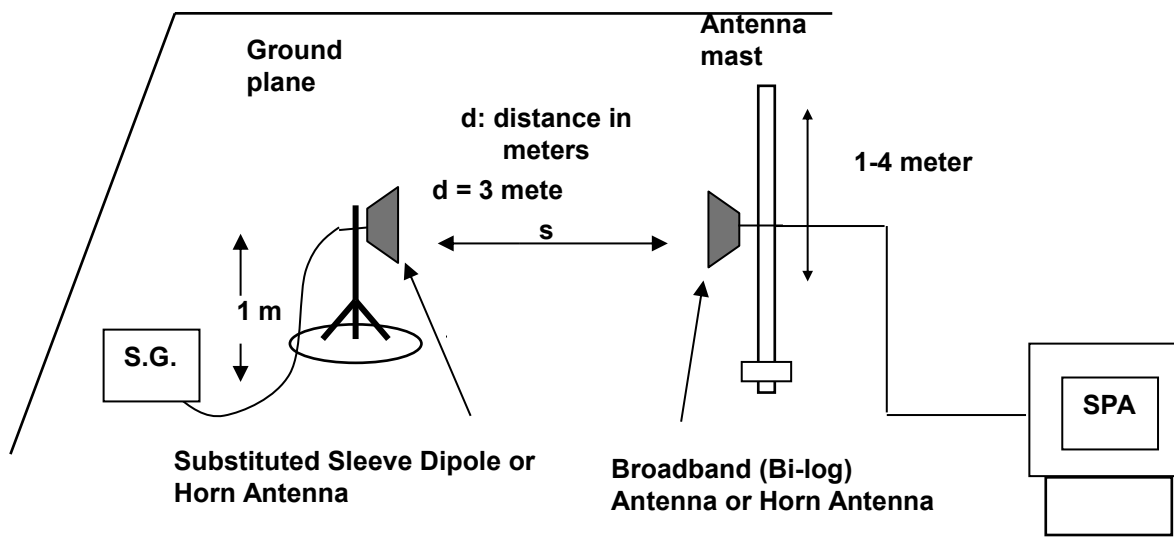
Below 1 GHz



Above 1 GHz



For Substituted Method Test Set-UP



■ Test Procedure

- a. The EUT was set up for the maximum power with WWAN link data modulation. The power was measured with Spectrum Analyzer. All measurements were done at 3 channels (low, middle and high operational frequency range).
- b. Radiation Emission measurement. In the semi-anechoic chamber, EUT placed on the 0.8 m (1.5 m for above 1 GHz) height of Turn Table, 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 1 m to 4 m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- c. The substitution antenna (Note:1 & 2) is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G.
- d. $E.I.R.P. = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}$
- e. $E.R.P. = E.I.R.P. - 2.15 \text{ dB}$
- f. Measurement range 9 kHz - 10 th Harmonic

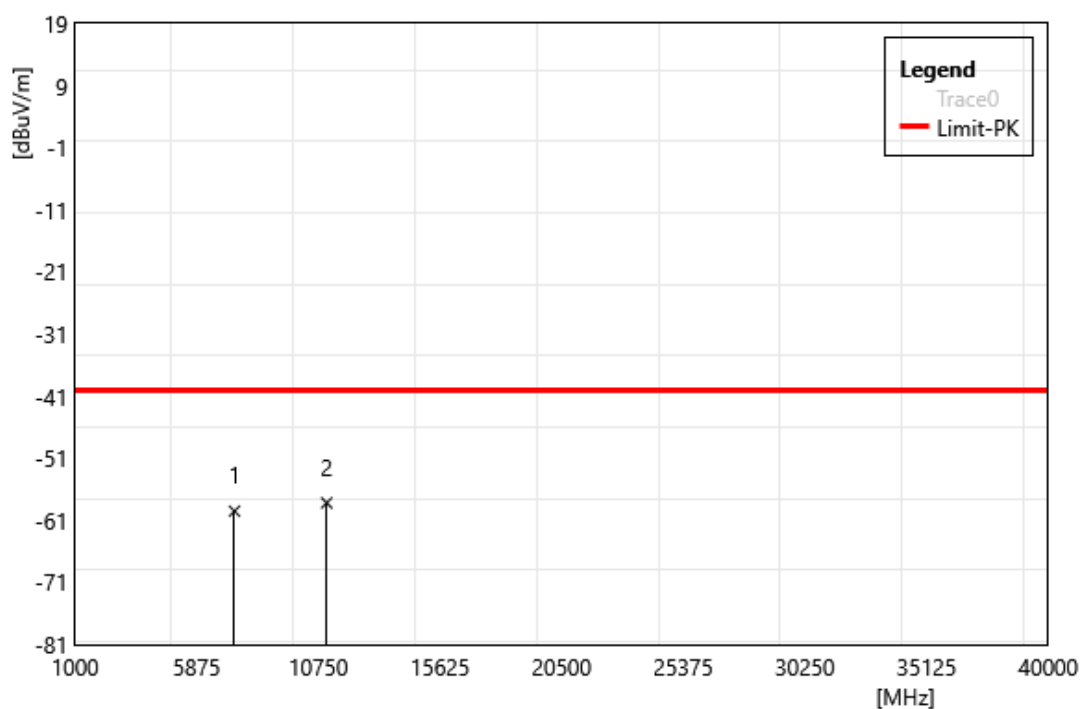
Note: 1. Below 1 GHz Substituted Method Test : Sleeve dipole antenna to Bi-Log Antenna

2. Above 1 GHz Substituted Method Test : Horn antenna to Horn Antenna

4 Test Results

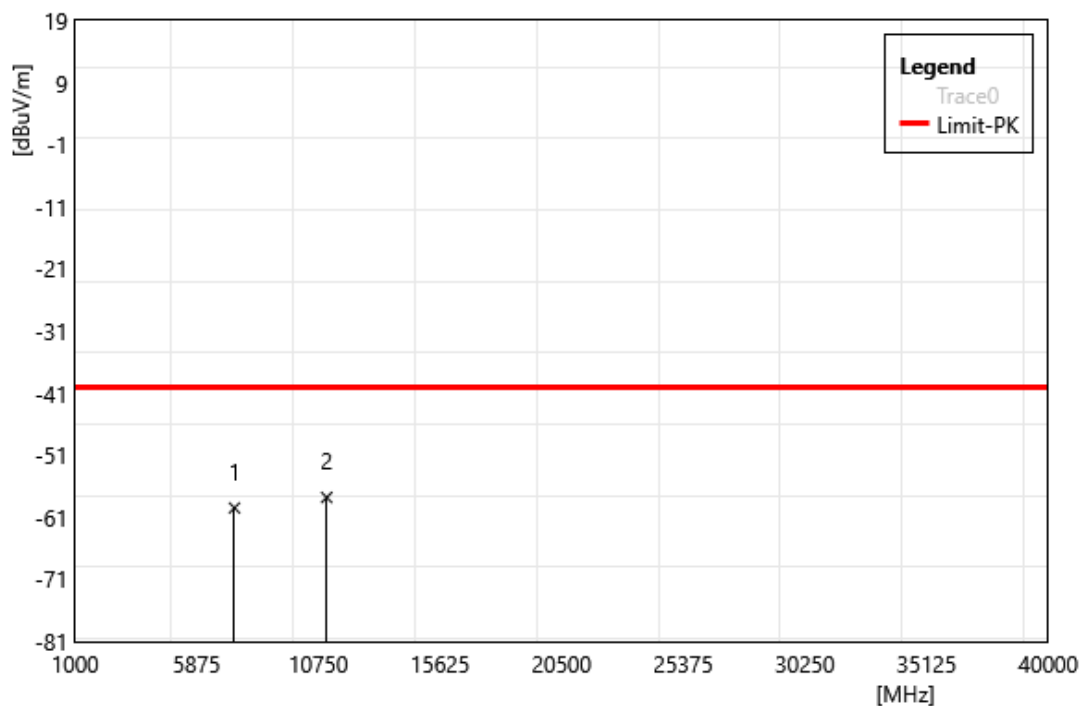
4.1. Radiated Emission

Test Site:	96602 - WG	Standard:	Part 22H_24E_27_90_96
Test Mode:	LTE Band 48 QPSK BW10		
	3695 MHz		
Polarization:	Horizontal		
Remark:			



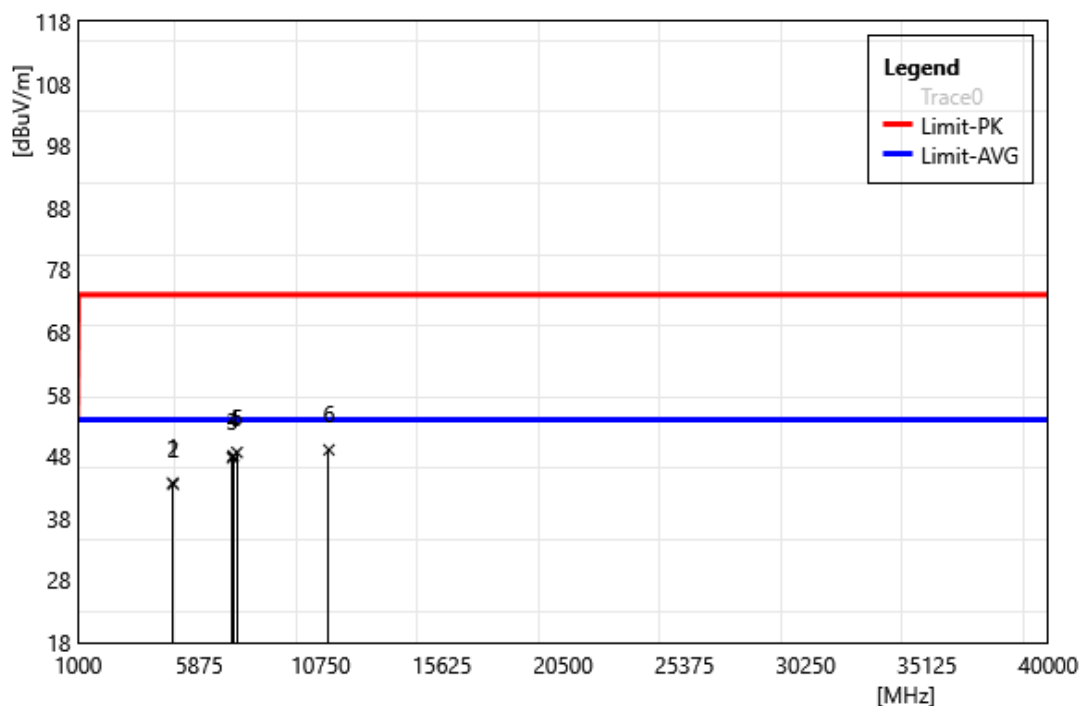
ID	Frequency MHz	Reading dBuV	Correct Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Remark
1	7390.00	-65.98	6.46	-59.52	-40.00	-19.52	PEAK
2	11085.00	-64.75	6.56	-58.19	-40.00	-18.19	PEAK

Test Site:	96602 - WG	Standard:	Part 22H_24E_27_90_96
Test Mode:	LTE Band 48 QPSK BW10		
	3695 MHz		
Polarization:	Vertical		
Remark:			



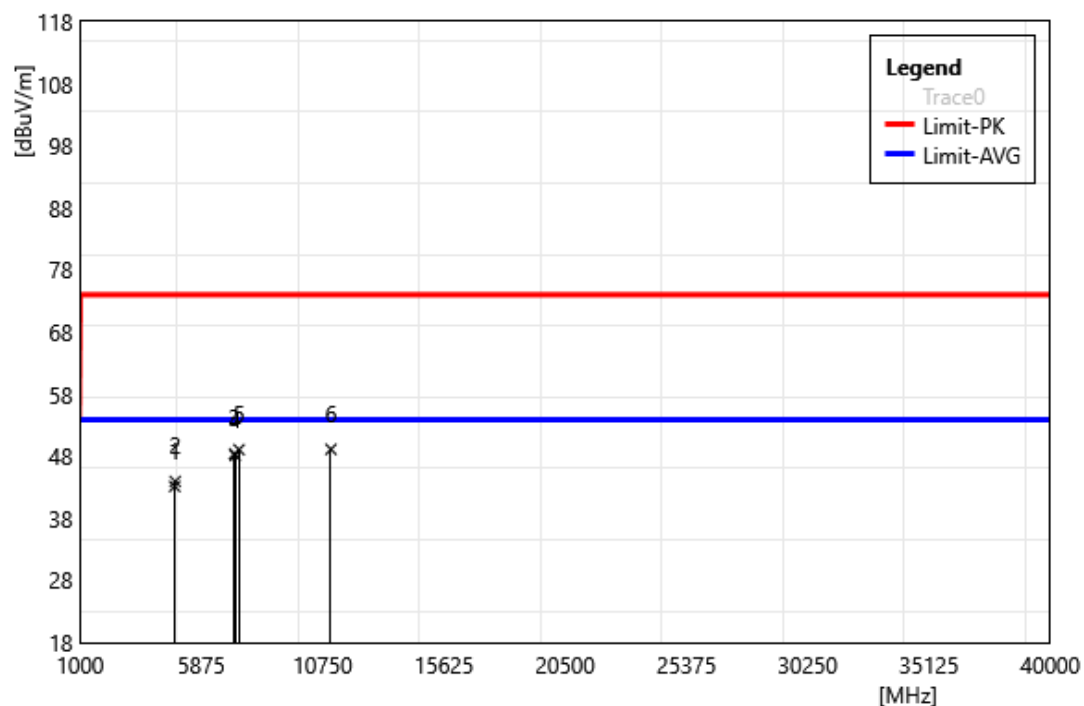
ID	Frequency MHz	Reading dBuV	Correct Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Remark
1	7390.00	-65.95	6.46	-59.49	-40.00	-19.49	PEAK
2	11085.00	-64.35	6.56	-57.79	-40.00	-17.79	PEAK

Test Site:	96602 - WG	Standard:	Part 22H_24E_27_90_96
Test Mode:	Colocation		
Polarization:	Horizontal		
Remark:	2.4G+BT+LTE		



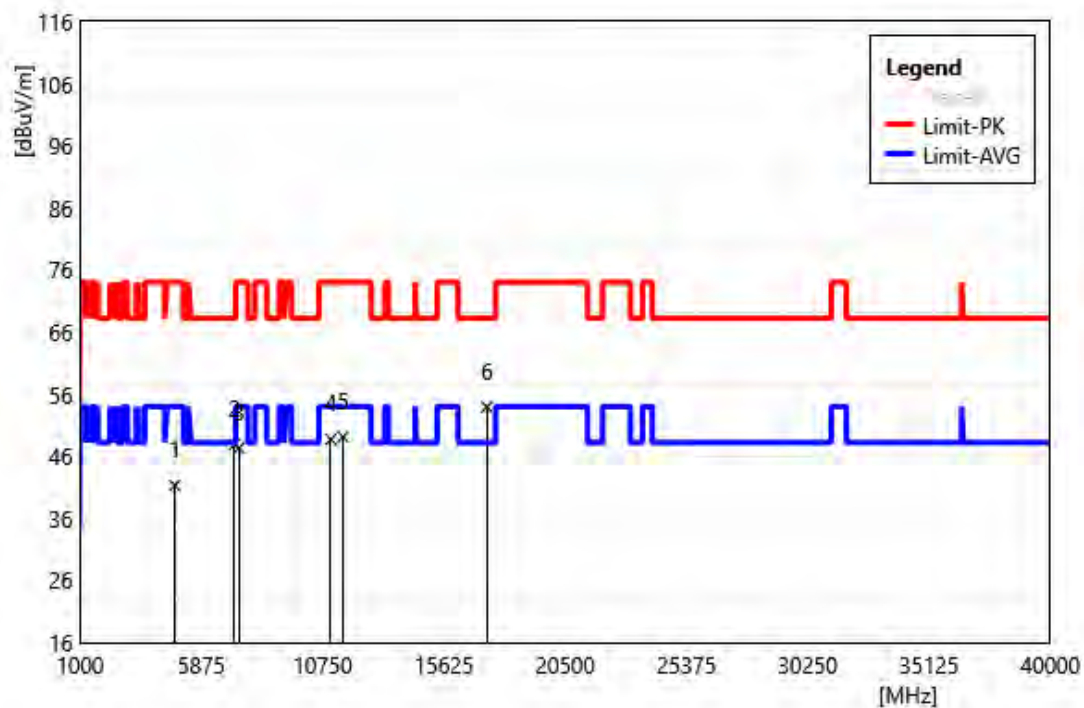
ID	Frequency MHz	Reading dBuV	Correct Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Remark
1	4804.00	42.39	1.30	43.69	74.00	-30.31	PEAK
2	4824.00	42.15	1.34	43.49	74.00	-30.51	PEAK
3	7206.00	41.27	6.47	47.74	74.00	-26.26	PEAK
4	7236.00	41.72	6.35	48.07	74.00	-25.93	PEAK
5	7390.00	42.16	6.46	48.62	74.00	-25.38	PEAK
6	11085.00	42.48	6.56	49.04	74.00	-24.96	PEAK

Test Site:	96602 - WG	Standard:	Part 22H_24E_27_90_96
Test Mode:	Colocation		
Polarization:	Vertical		
Remark:	2.4G+BT+LTE		



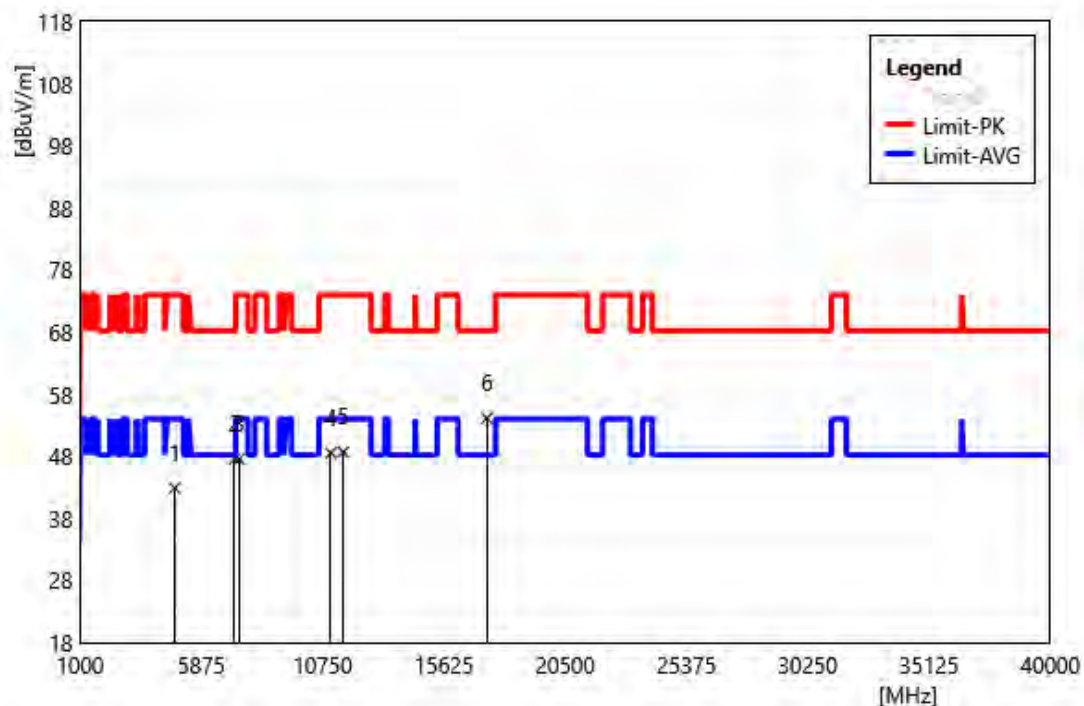
ID	Frequency MHz	Reading dBuV	Correct Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Remark
1	4804.00	41.85	1.30	43.15	74.00	-30.85	PEAK
2	4824.00	42.61	1.34	43.95	74.00	-30.05	PEAK
3	7206.00	41.95	6.47	48.42	74.00	-25.58	PEAK
4	7236.00	41.75	6.35	48.10	74.00	-25.90	PEAK
5	7390.00	42.60	6.46	49.06	74.00	-24.94	PEAK
6	11085.00	42.56	6.56	49.12	74.00	-24.88	PEAK

Test Site:	96602 - WG	Standard:	Part 22H_24E_27_90_96
Test Mode:	Colocation		
Polarization:	Horizontal		
Remark:	5G+BT+LTE		



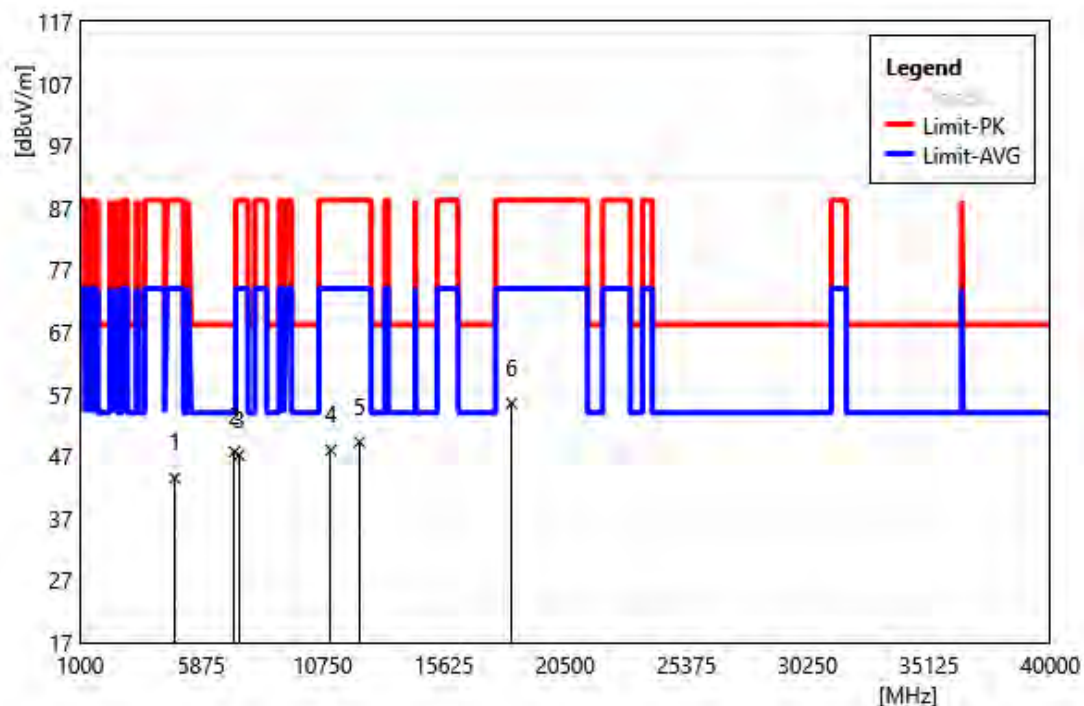
ID	Frequency MHz	Reading dBuV	Correct Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Remark
1	4804.00	40.00	1.30	41.30	74.00	-32.70	PEAK
2	7206.00	41.40	6.47	47.87	68.20	-20.33	PEAK
3	7390.00	40.87	6.46	47.33	74.00	-26.67	PEAK
4	11085.00	42.16	6.56	48.72	74.00	-25.28	PEAK
5	11570.00	41.65	7.48	49.13	74.00	-24.87	PEAK
6	17355.00	47.56	6.38	53.94	68.20	-14.26	PEAK

Test Site:	96602 - WG	Standard:	Part 22H_24E_27_90_96
Test Mode:	Colocation		
Polarization:	Vertical		
Remark:	5G+BT+LTE		



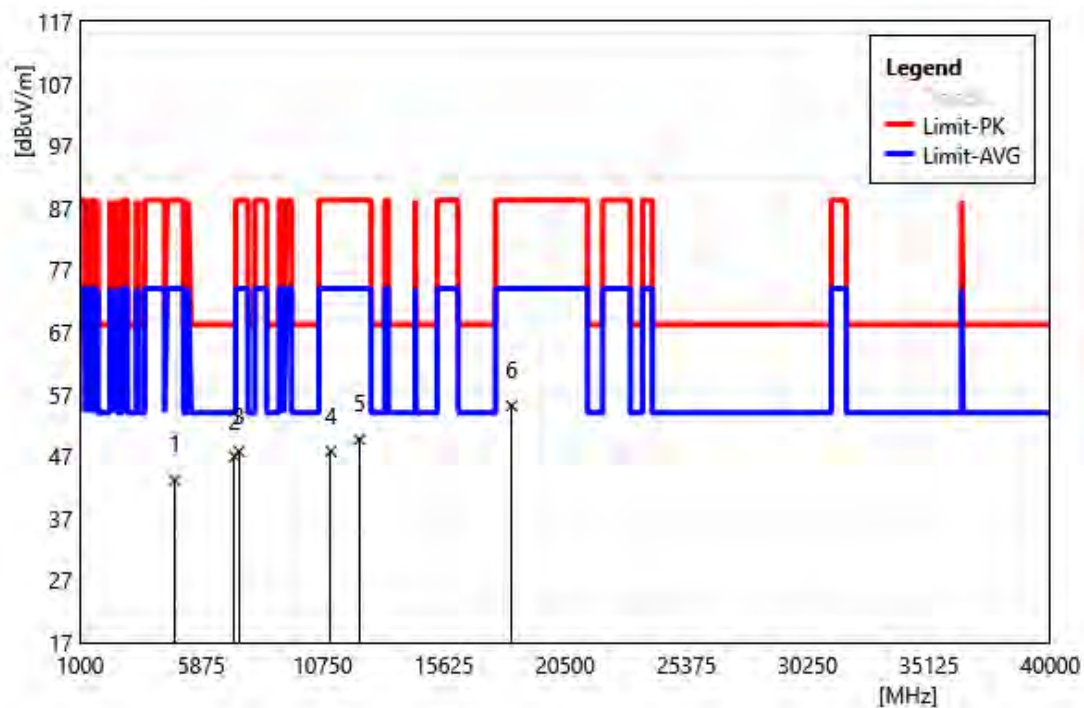
ID	Frequency MHz	Reading dBuV	Correct Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Remark
1	4804.00	41.56	1.30	42.86	74.00	-31.14	PEAK
2	7206.00	41.09	6.47	47.56	68.20	-20.64	PEAK
3	7390.00	41.07	6.46	47.53	74.00	-26.47	PEAK
4	11085.00	41.97	6.56	48.53	74.00	-25.47	PEAK
5	11570.00	41.20	7.48	48.68	74.00	-25.32	PEAK
6	17355.00	47.75	6.38	54.13	68.20	-14.07	PEAK

Test Site:	96602 - WG	Standard:	Part 22H_24E_27_90_96
Test Mode:	Colocation		
Polarization:	Horizontal		
Remark:	6G+BT+LTE		



ID	Frequency MHz	Reading dBuV	Correct Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Remark
1	4804.00	42.19	1.30	43.49	88.20	-44.71	PEAK
2	7206.00	41.23	6.47	47.70	68.20	-20.50	PEAK
3	7390.00	40.72	6.46	47.18	88.20	-41.02	PEAK
4	11085.00	41.43	6.56	47.99	88.20	-40.21	PEAK
5	12230.00	41.67	7.63	49.30	88.20	-38.90	PEAK
6	18345.00	47.91	7.62	55.53	88.20	-32.67	PEAK

Test Site:	96602 - WG	Standard:	Part 22H_24E_27_90_96
Test Mode:	Colocation		
Polarization:	Vertical		
Remark:	6G+BT+LTE		



ID	Frequency MHz	Reading dBuV	Correct Factor dB/m	Result dBuV/m	Limit dBuV/m	Margin dB	Remark
1	4804.00	41.90	1.30	43.20	88.20	-45.00	PEAK
2	7206.00	40.49	6.47	46.96	68.20	-21.24	PEAK
3	7390.00	41.33	6.46	47.79	88.20	-40.41	PEAK
4	11085.00	41.24	6.56	47.80	88.20	-40.40	PEAK
5	12230.00	42.08	7.63	49.71	88.20	-38.49	PEAK
6	18345.00	47.51	7.62	55.13	88.20	-33.07	PEAK

--- END---