TEST REPORT

Reference No......	:	WTX26X03067173W001
FCC ID.....	:	2BVWK-TASW200I
Applicant.....	:	Protect Connect Limited dba TruAlert Systems
Address.....	:	Unit 1202, 12/F, 299QRC 287–299 Queen's Road Central Sheung Wan, Hong Kong
Manufacturer.....	:	Protect Connect Limited dba TruAlert Systems
Address.....	:	Unit 1202, 12/F, 299QRC 287–299 Queen's Road Central Sheung Wan, Hong Kong
Product Name.....	:	Emergency Alert Smartwatch
Model No......	:	TA-SW-200i
Standards.....	:	FCC Part 22H, FCC Part 24E, FCC Part 27
Date of Receipt sample.....	:	2026-03-18
Date of Test.....	:	2026-03-25 to 2026-03-31; 2026-04-02 to 2026-04-17
Date of Issue.....	:	2026-04-21
Test Report Form No......	:	WTX_Part 22_Part 24_Part 27W
Test Result.....	:	**Pass**

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:

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Report version

Version No.	Date of issue	Description
Rev.00	2026-04-21	Original
/	/	/

1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

General Description of EUT:	
Product Name:	Emergency Alert Smartwatch
Trade Name:	/
Model No.:	TA-SW-200i
Adding Model(s):	/
Rated Voltage:	DC3.8V
Battery:	700mAh
Adapter Model:	HX06B-0501000-CU Input:100-240V~50/60Hz 0.2A Output:5V 1A
Note: The sample information is provided by the customer.	

Technical Characteristics of EUT:	
2G	
Support Networks:	GSM, GPRS, EDGE
Support Band:	GSM850/PCS1900
Uplink Frequency:	GSM/GPRS/EDGE 850: 824~849MHz GSM/GPRS/EDGE 1900: 1850~1910MHz
Downlink Frequency:	GSM/GPRS/EDGE 850: 869~894MHz GSM/GPRS/EDGE 1900: 1930~1990MHz
Max RF Output Power:	GSM850: 33.44dBm, GSM1900: 29.91dBm EDGE850: 27.52dBm, EDGE1900:26.35dBm
Type of Emission:	GSM850: 244KGXW, GSM1900: 246KGXW EDGE850: 247KG7W, EDGE1900: 261KG7W
Type of Modulation:	GMSK, 8PSK
Type of Antenna:	Integral Antenna
Antenna Gain:	GSM850: -2.3dBi; GSM1900: -2.3dBi
GPRS/EDGE Class:	Class 12
3G	
Support Networks:	WCDMA, HSDPA, HSUPA
Support Band:	WCDMA Band 2, WCDMA Band 4, WCDMA Band 5
Uplink Frequency:	WCDMA Band 2: 1850~1910MHz WCDMA Band 4: 1710~1755MHz WCDMA Band 5: 824~849MHz
Downlink Frequency:	WCDMA Band 2: 1930~1990MHz WCDMA Band 4: 2110~2155MHz WCDMA Band 5: 869~894MHz
RF Output Power:	WCDMA Band 2: 23.13dBm, WCDMA Band 4: 22.72dBm WCDMA Band 5: 23.42dBm
Type of Emission:	WCDMA Band 2: 4M19F9W WCDMA Band 4: 4M19F9W WCDMA Band 5: 4M19F9W
Type of Modulation:	BPSK, QPSK, 16QAM
Antenna Type:	Integral Antenna
Antenna Gain:	WCDMA Band 2: -2.3dBi, WCDMA Band 4: -2.3dBi, WCDMA Band 5: -2.3dBi
Note: 1: The Antenna Gain is provided by the customer and can affect the validity of results. *2: The data provided by the customer and can affect the validity of results.*	

1.2 Test Standards

The tests were performed according to following standards:

FCC Rules Part 2: Frequency Alloca-Tions and Radio Treaty Mat-Ters; General Rules and Reg-Ulations.
FCC Rules Part 22: Private Land Mobile Radio Services.
FCC Rules Part 24: Public Mobile Services.
FCC Rules Part 27: Miscellaneous Wireless Communications Services.
TIA/EIA 603 E March 2016: Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.
ANSI C63.26-2015: American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services
KDB 971168 D01 Power Meas License Digital Systems v03r01: Measurement Guidance for Certification of Licensed Digital Transmitters.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with TIA/EIA 603 E/ KDB 971168/ ANSI C63.26
The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted accordingly in reference to the Operating Instructions.

1.4 Test Facility

Address of the test laboratory
Laboratory: Waltek Testing Group (Shenzhen) Co., Ltd.
Address: 1/F., Room 101, Building 1, Hongwei Industrial Park, Liuxian 2nd Road, Block 70 Bao'an District, Shenzhen, Guangdong, China

FCC – Registration No.: 125990
Waltek Testing Group (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is mai ntained in our files. The Designation Number is CN5010, and Test Firm Registration Number is 125990.

Industry Canada (IC) Registration No.: 11464A
The 3m Semi-anechoic chamber of Waltek Testing Group (Shenzhen) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 11464A and the CAB identifier is CN0057.

1.5 EUT Setup and Test Mode

The EUT was operated in the engineering mode to fix the Tx frequency that was for the purpose of the measurements. All testing shall be performed under maximum output power condition, and to measure its highest
possible emissions level, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	GSM 850	Low, Middle, High Channels
TM2	GPRS 850	Low, Middle, High Channels
TM3	EDGE 850	Low, Middle, High Channels
TM4	GSM 1900	Low, Middle, High Channels
TM5	GPRS 1900	Low, Middle, High Channels
TM6	EDGE 1900	Low, Middle, High Channels
TM7	WCDMA Band 5	Low, Middle, High Channels
TM8	HSDPA Band 5	Low, Middle, High Channels
TM9	HSUPA Band 5	Low, Middle, High Channels
TM10	WCDMA Band 4	Low, Middle, High Channels
TM11	HSDPA Band 4	Low, Middle, High Channels
TM12	HSUPA Band 4	Low, Middle, High Channels
TM13	WCDMA Band 2	Low, Middle, High Channels
TM14	HSDPA Band 2	Low, Middle, High Channels
TM15	HSUPA Band 2	Low, Middle, High Channels

Testing Configure			
Support Band	Support Standard	Channel Frequency	Channel Number
GSM 850	GSM/GPRS/EDGE	824.2 MHz	128
		836.6 MHz	190
		848.8 MHz	251
PCS 1900	GSM/GPRS/EDGE	1850.2 MHz	512
		1880.0 MHz	661
		1909.8 MHz	810
WCDMA Band 5	WCDMA/HSDPA/HSUPA	826.4 MHz	4132
		836.6 MHz	4183
		846.6 MHz	4233
WCDMA Band 4	WCDMA/HSDPA/HSUPA	1712.4 MHz	1312
		1732.4 MHz	1412
		1752.6 MHz	1513
WCDMA Band 2	WCDMA/HSDPA/HSUPA	1852.4 MHz	9262
		1880.0 MHz	9400
		1907.6 MHz	9538
Note: the transmitter has been tested on the communications mode of GSM, GPRS, EDGE, WCDMA, HSDPA, HSUPA compliance test and record the worst case.			

Test Conditions	
Temperature:	22~25°C
Relative Humidity:	50~55 %.
ATM Pressure:	1019 mbar

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
DC Cable	0.55	Unshielded	Without Ferrite

Special Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

1.6 Measurement Uncertainty

Measurement uncertainty		
Parameter	Conditions	Uncertainty
RF Output Power	Conducted	±0.57dB
Occupied Bandwidth	Conducted	±0.015MHz
Frequency Stability	Conducted	2.3%
Transmitter Spurious Emissions	Conducted	±0.42dB
Transmitter Spurious Emissions chamber A	Radiated	@9kHz to 30MHz: ±3.0dB
		@30MHz to 1GHz: ±5.70dB
		@1GHz to 6GHz: ±5.88dB
		@6GHz to 18GHz: ±5.96dB
		@18GHz to 40GHz: ±6.12dB
Transmitter Spurious Emissions chamber B	Radiated	@30MHz to 1GHz: ±5.36dB
Transmitter Spurious Emissions chamber C	Radiated	@9kHz to 30MHz: ±3.0dB
		@30MHz to 1GHz: ±5.28dB
		@1GHz to 6GHz: ±5.56dB
		@6GHz to 18GHz: ±5.72dB
		@18GHz to 40GHz: ±6.12dB

1.7 Test Equipment List and Details

Internal No.	Description	Manufacturer	Model	Serial No.	Cal Date	Due. Date
WTXE1041 A1002	Communication Tester	Rohde & Schwarz	CMW500	1201.0002k50-148650-FB	2026-03-25	2027-03-24
WTXE1022 A1002	GSM Tester	Rohde & Schwarz	CMU200	114403	2026-02-06	2027-02-05
WTXE1104 A1001	MXG Vector Signal Generator	Agilent	N5182A	MY47420108	2026-02-06	2027-02-05
WTXE1104 A1002	DC Power Supply	Agilent	E3634A	MY40009294	2026-02-06	2027-02-05
WTXE1104 A1003	EXG Analog Signal Generator	KEYSIGHT	N5173B	MY61252892	2026-02-06	2027-02-05
WTXE1104 A1004	Spectrum Analyzer	Rohde&Schwarz	FSV40-N	101559	2026-02-06	2027-02-05
WTXE1104 A1005-2	Band Reject Filter Group	Tonscend	JS0806-F	23A806F0658	2026-02-06	2027-02-05
WTXW1105 A1136	RF ATTENUATOR	FEIYANG	N-JK	/	2026-02-06	2027-02-05
WTXE1003 A1-005	Coaxial Cable	/	0M4RFC	/	2026-02-23	2027-02-22
☐ Chamber A: Below 1GHz						
WTXE1005 A1003	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2026-02-05	2027-02-04
WTXE1001 A1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2026-02-05	2027-02-04
WTXE1007 A1002	Amplifier	HP	8447F	2805A03475	2026-02-05	2027-02-04
WTXE1010 A1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2026-02-05	2027-02-04
WTXE1010 A1006	Broadband Antenna	Schwarz beck	VULB9163	9163-333	2026-03-11	2029-03-10
WTXE1104 A1032-1	Coaxial Cable	/	RC_6G-N-M	/	2026-02-23	2027-02-22
WTXE1104 A1032-2	Coaxial Cable	/	RC_6G-N-M	/	2026-02-23	2027-02-22
WTXE1104 A1032-3	Coaxial Cable	/	RC_6G-N-M	/	2026-02-23	2027-02-22
☐ Chamber A: Above 1GHz						
WTXE1005 A1003	Spectrum Analyzer	Rohde & Schwarz	FSP30	836079/035	2026-02-05	2027-02-04

WTXE1001 A1001	EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2026-02-05	2027-02-04
WTXE1065 A1001	Amplifier	C&D	PAP-1.0G18	14918	2026-02-05	2027-02-04
WTXE1010 A1005	Horn Antenna	ETS	3117	00086197	2026-02-05	2027-02-04
WTXE1010 A1010	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2026-02-10	2027-02-09
WTXE1003 A1001	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2026-02-05	2027-02-04
WTXE1005 A1006	Spectrum Analyzer	Rohde & Schwarz	FSP40	100612	2026-02-06	2027-02-05
WTXE1104 A1033-1	Coaxial Cable	/	C16-07-07	/	2026-02-23	2027-02-22
WTXE1104 A1033-2	Coaxial Cable	/	C16-07-07	/	2026-02-23	2027-02-22
WTXE1104 A1033-3	Coaxial Cable	/	C16-07-07	/	2026-02-23	2027-02-22
☐ Chamber B:Below 1GHz						
WTXE1010 A1006	Trilog Broadband Antenna	Schwarz beck	VULB9163(B)	9163-635	2024-03-17	2027-03-16
WTXE1038 A1001	Amplifier	Agilent	8447D	2944A10457	2026-02-05	2027-02-04
WTXE1001 A1002	EMI Test Receiver	Rohde & Schwarz	ESPI	101391	2026-02-05	2027-02-04
WTXE1104 A1031-1	Coaxial Cable	/	1.5MRFC-LWB3	/	2026-02-23	2027-02-22
WTXE1104 A1031-2	Coaxial Cable	/	RG 316	/	2026-02-23	2027-02-22
WTXE1104 A1031-3	Coaxial Cable	/	RG 316	/	2026-02-23	2027-02-22
☒ Chamber C:Below 1GHz						
WTXE1093 A1001	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2026-02-05	2027-02-04
WTXE1010 A1013-1	Trilog Broadband Antenna	Schwarz beck	VULB 9168	1194	2024-04-18	2027-04-17
WTXE1007 A1003	Amplifier	HP	8447F	2944A03869	2026-02-05	2027-02-04
WTXE1010 A1007	Loop Antenna	Schwarz beck	FMZB 1516	9773	2026-02-05	2027-02-04

WTXE1104 A1034-1	Coaxial Cable	/	RC_6G-N-M	/	2026-02-23	2027-02-22
WTXE1104 A1034-2	Coaxial Cable	/	RC_6G-N-M	/	2026-02-23	2027-02-22
WTXE1104 A1034-3	Coaxial Cable	/	RC_6G-N-M	/	2026-02-23	2027-02-22
☒ Chamber C: Above 1GHz						
WTXE1093 A1001	EMI Test Receiver	Rohde & Schwarz	ESIB 26	100401	2026-02-05	2027-02-04
WTXE1103 A1005	Horn Antenna	POAM	RTF-118A	1820	2025-06-13	2027-06-12
WTXE1103 A1006	Amplifier	Tonscend	TAP01018050	AP22E806 235	2026-02-05	2027-02-04
WTXE1010 A1010	DRG Horn Antenna	A.H. SYSTEMS	SAS-574	571	2026-02-10	2027-02-09
WTXE1003 A1001	Pre-amplifier	Schwarzbeck	BBV 9721	9721-031	2026-02-05	2027-02-04
WTXE1104 A1035-1	Coaxial Cable	/	RC-18G-N-M	/	2026-02-23	2027-02-22
WTXE1104 A1035-2	Coaxial Cable	/	RC-18G-N-M	/	2026-02-23	2027-02-22
WTXE1104 A1035-3	Coaxial Cable	/	RC-18G-N-M	/	2026-02-23	2027-02-22
☐ Conducted Room 1#						
WTXE1104 A1029	EMI Test Receiver	Rohde & Schwarz	ESCI	100525	2025-11-25	2026-11-24
WTXE1002 A1001	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2026-02-05	2027-02-04
WTXE1003 A1001	AC LISN	Schwarz beck	NSLK8126	8126-279	2026-02-05	2027-02-04
WTXE1104 A1036	Coaxial Cable	/	RG 316	/	2026-02-23	2027-02-22
WTXE1104 A1038	Coaxial Cable	/	6MRFC-DP	/	2026-02-23	2027-02-22
☒ Conducted Room 2#						
WTXE1001 A1004	EMI Test Receiver	Rohde & Schwarz	ESPI	101259	2026-02-05	2027-02-04
WTXE1003 A1003	LISN	Rohde & Schwarz	ENV 216	100097	2026-02-05	2027-02-04
WTXE1104 A1037	Coaxial Cable	/	RG 316	/	2026-02-23	2027-02-22

Software List			
Description	**Manufacturer**	**Model**	**Version**
EMI Test Software/EZ-EMC (Radiated Emission A)	Farad	RA-03A1	1.1.4.2
EMI Test Software/EZ-EMC (Radiated Emission B)	Farad	RA-03A1	1.1.4.2
EMI Test Software/EZ-EMC (Radiated Emission C)	Farad	RA-03A1-2	1.1.4.2

*Remark: indicates software version used in the compliance certification testing.

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test Item	Result
§22.913(a), §24.232(c), §27.50(d)	RF Output Power	Compliant
§24.51, §27.50	Peak-to-average Ratio (PAR) of Transmitter	Compliant
§22.917(b), §24.238(b), §27.53	Emission Bandwidth	Compliant
§22.917(a), §24.238(a), §27.53(h)	Spurious Emissions at Antenna Terminal	Compliant
§22.917(a), §24.238(a), §27.53(h)	Spurious Radiation Emissions	Compliant
§22.917(a), §24.238(a), §27.53(h)	Out of Band Emissions	Compliant
§22.355, §24.235, §27.54	Frequency Stability	Compliant

3. RF Output Power

3.1 Standard Applicable

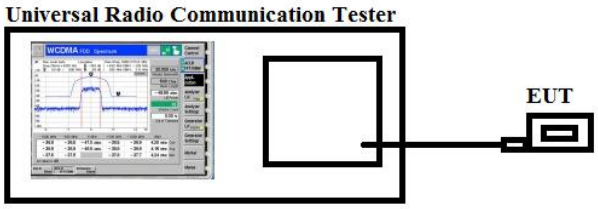
According to §22.913(a)(2), the ERP of mobile and portable stations transmitters and auxiliary test transmitters must not exceed 7 Watts.

According to §24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ a means for limiting power to the minimum necessary for successful communications.

According to §27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1710-1755MHz band and mobile and portable stations operating in the 1695-1710MHz and 1755-1780MHz bands are limited to 1 watt EIRP.

3.2 Test Procedure

- Conducted output power test method:



- Radiated power test method:

1. The setup of EUT is according with per ANSI/TIA Standard 603E and ANSI C63.26 measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.

4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

3.3 Summary of Test Results/Plots

➢ **Max. Radiated Power**

Mode	Channel	Antenna Polar	ERP (dBm)	Limit (dBm)	Result
GSM850	128	V	27.16	<38.45	Pass
		H	20.70		
	190	V	27.53		
		H	20.67		
	251	V	27.51		
		H	20.22		
GPRS850	128	V	27.34	<38.45	Pass
		H	20.79		
	190	V	27.64		
		H	20.59		
	251	V	27.30		
		H	20.52		
EGPRS850	128	V	27.75	<38.45	Pass
		H	20.39		
	190	V	27.16		
		H	20.49		
	251	V	27.81		
		H	20.56		

Mode	Channel	Antenna Polar	EIRP (dBm)	Limit (dBm)	Result
PCS1900	512	V	27.85	<33.00	Pass
		H	21.34		
	661	V	27.70		
		H	21.53		
	810	V	27.62		
		H	21.12		
GPRS1900	512	V	27.70	<33.00	Pass
		H	21.65		
	661	V	27.69		
		H	22.27		
	810	V	27.16		
		H	21.70		
EGPRS1900	512	V	27.53	<33.00	Pass
		H	21.61		
	661	V	27.79		
		H	21.25		
	810	V	27.16		
		H	21.70		

Mode	Channel	Antenna Polar	ERP	Limit (dBm)	Result
WCDMA Band V	4132	V	21.53	<38.45	Pass
		H	19.63		
	4183	V	21.71		
		H	19.85		
	4233	V	21.23		
		H	19.70		

Mode	Channel	Antenna Polar	EIRP	Limit (dBm)	Result
WCDMA Band IV	1312	V	20.59	<30.00	Pass
		H	18.89		
	1412	V	20.16		
		H	17.75		
	1513	V	21.34		
		H	17.70		

Mode	Channel	Antenna Polar	EIRP	Limit (dBm)	Result
WCDMA Band II	9262	V	20.63	<33.00	Pass
		H	18.75		
	9400	V	20.16		
		H	18.70		
	9538	V	20.53		
		H	17.29		

- **Max. Conducted Power (Average power)**

Please refer to Appendix A

4. Peak-to-average Ratio (PAR) of Transmitter

4.1 Standard Applicable

According to §24.232(d), power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51, in measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13dB.

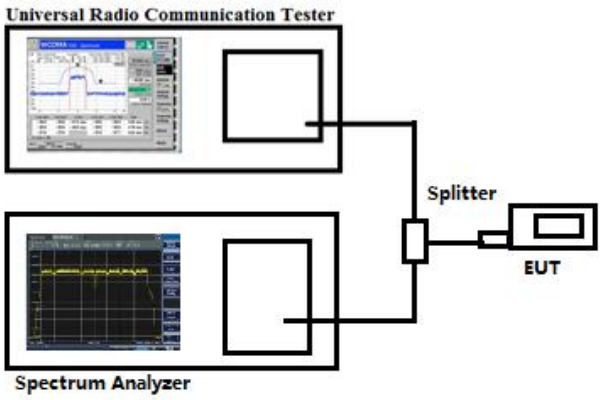
According to §27.50(B), the peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13dB for more than 0.1 percent of the time or other Commission approved procedure. The measurement must be performed using a signal corresponding to the highest PAPR expected during periods of continuous transmission.

4.2 Test Procedure

According with KDB 971168

1. The signal analyzer' s CCDF measurement profile is enabled.
2. Frequency = carrier center frequency.
3. Measurement BW > Emission bandwidth of signal.
4. The signal analyzer was set to collect one million samples to generate the CCDF curve.
5. The measurement interval was set depending on the type of signal analyzed. For continuous signals (>98% duty cycle), the measurement interval was set to 1ms. For burst transmissions, the spectrum analyzer is set to use an internal " RF Burst" trigger that is synced with an incoming pulse and the measurement interval is set to less than the duration of the " on time" of one burst to ensure that energy is only captured during a time in which the transmitter is operating at maximum power.

Test Configuration for the emission bandwidth testing:



4.3 Summary of Test Results

Please refer to Appendix B.

5. Emission Bandwidth

5.1 Standard Applicable

According to §22.917(b), 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 26dB below the transmitter power.

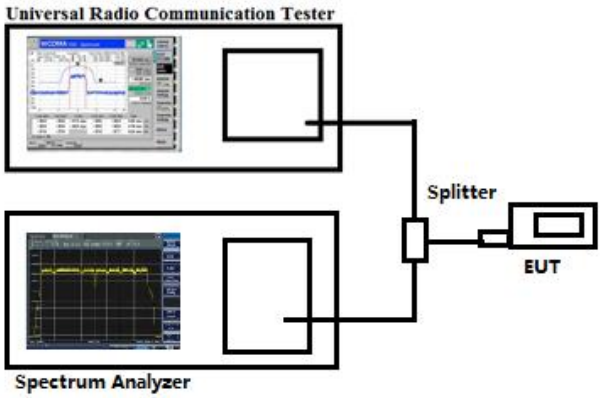
According to §24.238(b), the emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26dB below the transmitter power.

According to §27.53, 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 26dB below the transmitter power.

5.2 Test Procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 10kHz for GSM mode and 100kHz for WCDMA mode, VBW shall be at least 3 times the RBW, and the 26dB bandwidth was recorded.

Test Configuration for the emission bandwidth testing:



5.3 Summary of Test Results/Plots

Please refer to Appendix C.

6. Out of Band Emissions at Antenna Terminal

6.1 Standard Applicable

According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

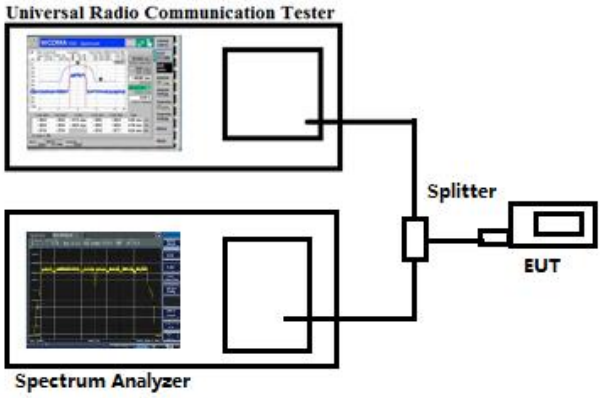
According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to §27.53 (h), 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 log10 (P) dB.

6.2 Test Procedure

The RF output terminal of the transmitter was connected to the input of the spectrum analyzer via a suitable attenuation. The RBW of the spectrum analyzer was set to 100kHz and 1MHz for the scan frequency from 30MHz to 1GHz and the scan frequency from 1GHz to up to 10th harmonic.

Test Configuration for the out of band emissions testing:



6.3 Summary of Test Results/Plots

Please refer to Appendix D.

7. Spurious Radiated Emissions

7.1 Standard Applicable

According to §22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to §24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

According to §27.53 (h), 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 log10 (P) dB.

7.2 Test Procedure

1. The setup of EUT is according with per ANSI/TIA Standard 603E and ANSI C63.26 measurement procedure.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

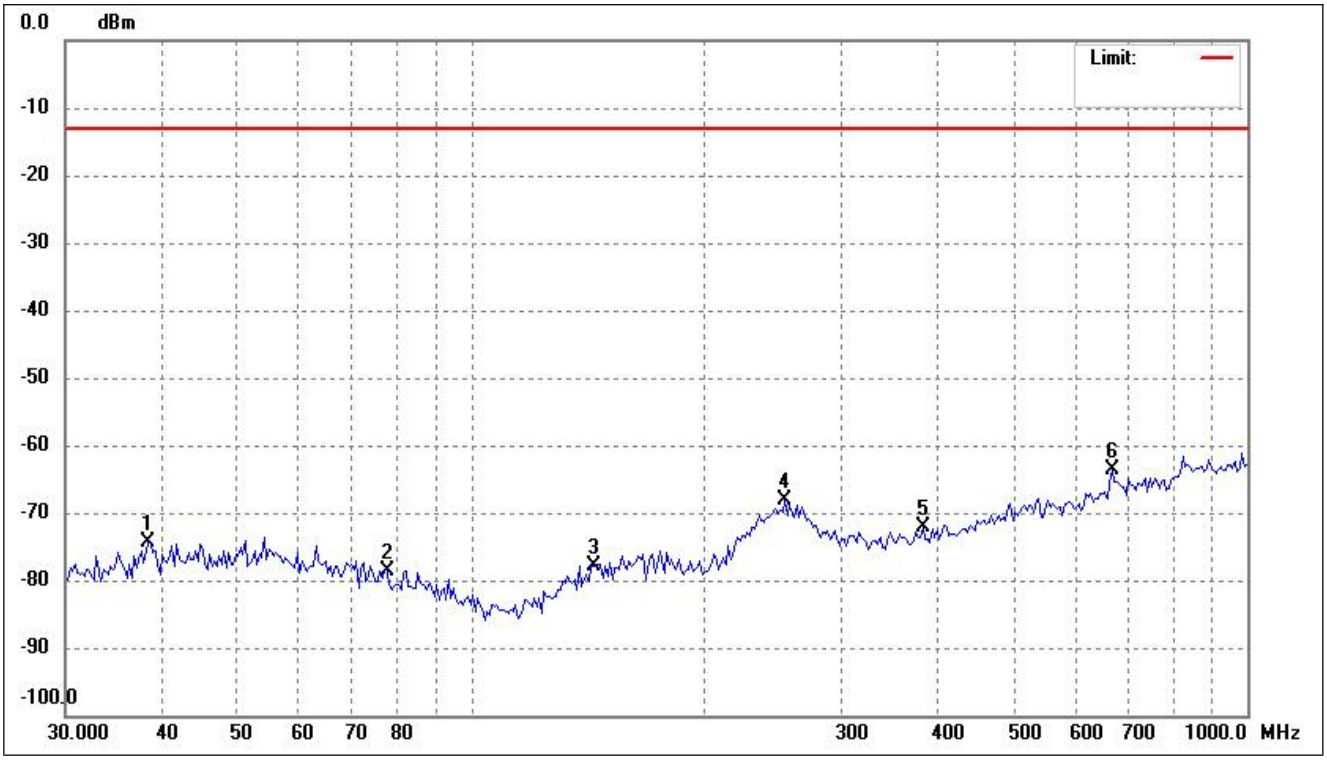
Spurious attenuation limit in dB =43+10 Log_{10} (power out in Watts)

7.3 Summary of Test Results/Plots

Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

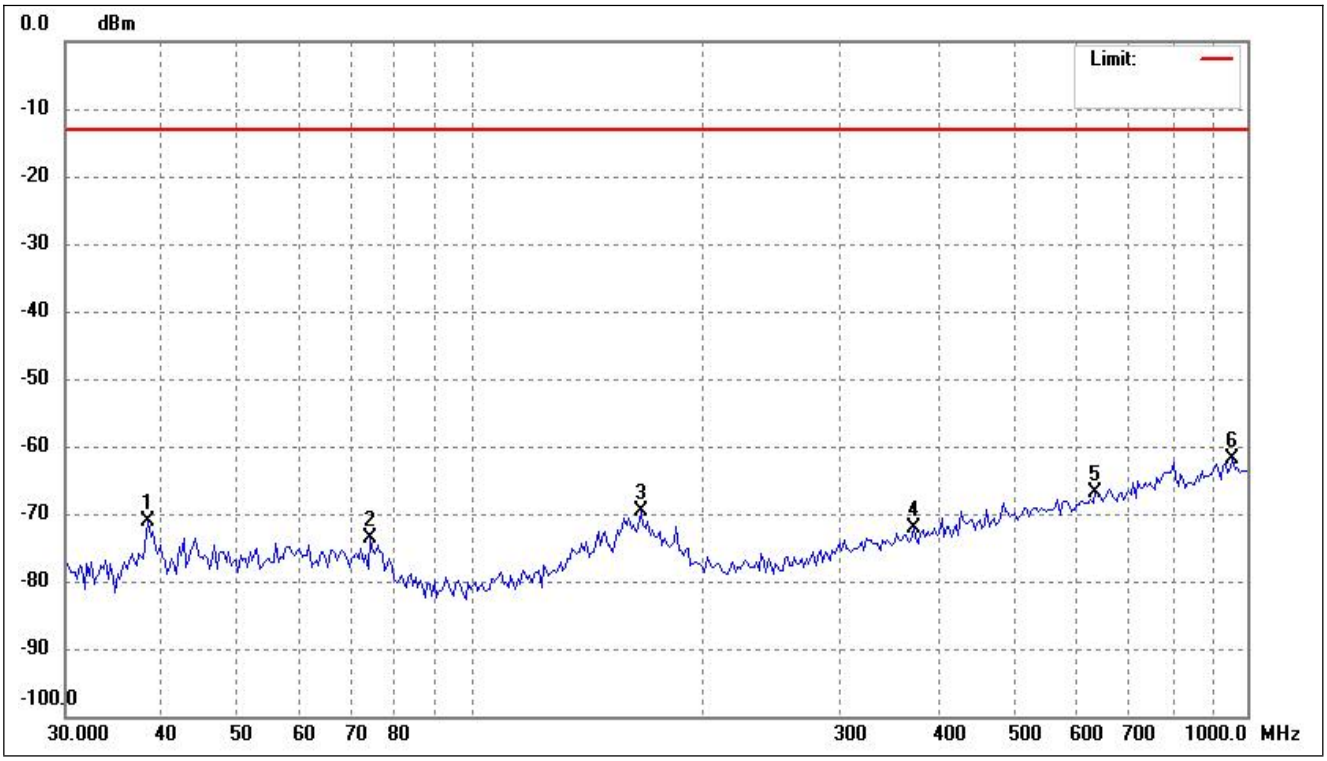
➢ Spurious Emissions Below 1GHz

For Cellular Band			
Test Channel	GSM850	Polarity:	Horizontal



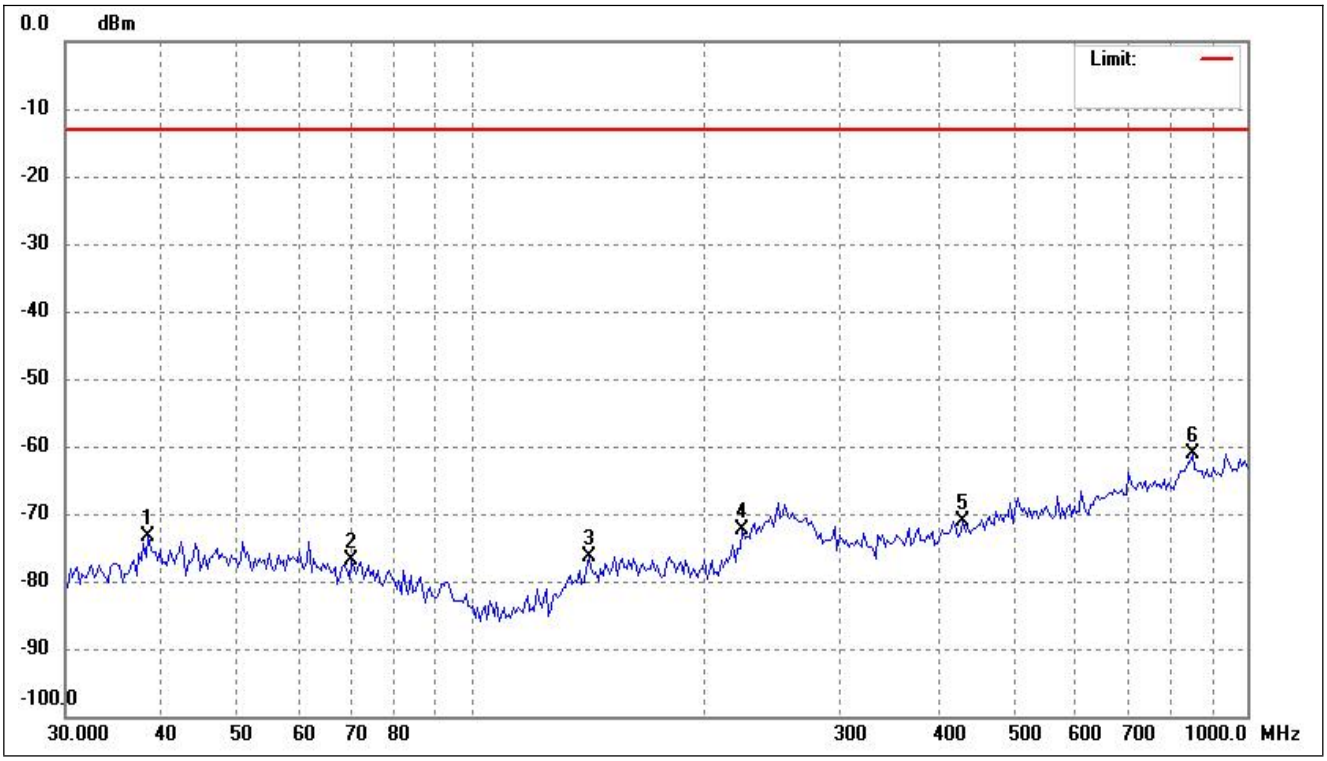
No.	Frequency (MHz)	Reading (dBm)	Correct Factor(dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Remark
1	38.3651	-76.87	2.39	-74.48	-13.00	-61.48	ERP
2	78.0143	-78.39	-0.34	-78.73	-13.00	-65.73	ERP
3	143.7759	-77.91	0.13	-77.78	-13.00	-64.78	ERP
4	254.0312	-76.41	8.21	-68.20	-13.00	-55.20	ERP
5	381.8519	-76.67	4.59	-72.08	-13.00	-59.08	ERP
6	669.9523	-73.72	10.15	-63.57	-13.00	-50.57	ERP

For Cellular Band			
Test Channel	GSM850	Polarity:	Vertical



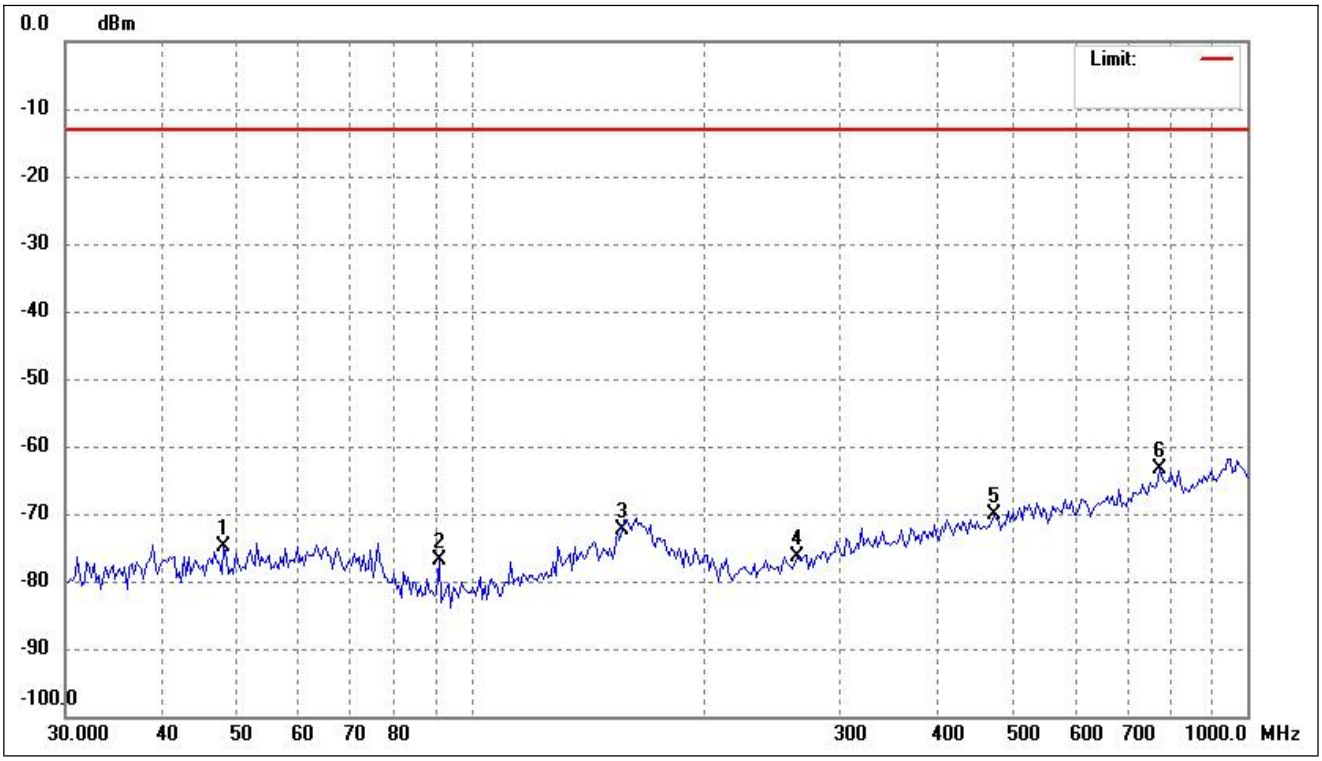
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	
1	38.3651	-73.53	2.39	-71.14	-13.00	-58.14	ERP
2	74.2696	-75.62	1.94	-73.68	-13.00	-60.68	ERP
3	165.4716	-76.52	6.96	-69.56	-13.00	-56.56	ERP
4	371.2679	-76.92	4.78	-72.14	-13.00	-59.14	ERP
5	637.7945	-76.09	9.31	-66.78	-13.00	-53.78	ERP
6	958.7134	-74.62	12.69	-61.93	-13.00	-48.93	ERP

For Cellular Band			
Test Channel	GSM1900	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	
1	38.3651	-75.73	2.39	-73.34	-13.00	-60.34	ERP
2	70.2095	-77.82	1.03	-76.79	-13.00	-63.79	ERP
3	141.7694	-76.29	-0.11	-76.40	-13.00	-63.40	ERP
4	223.8481	-76.44	4.06	-72.38	-13.00	-59.38	ERP
5	430.3052	-76.62	5.44	-71.18	-13.00	-58.18	ERP
6	850.7602	-74.69	13.61	-61.08	-13.00	-48.08	ERP

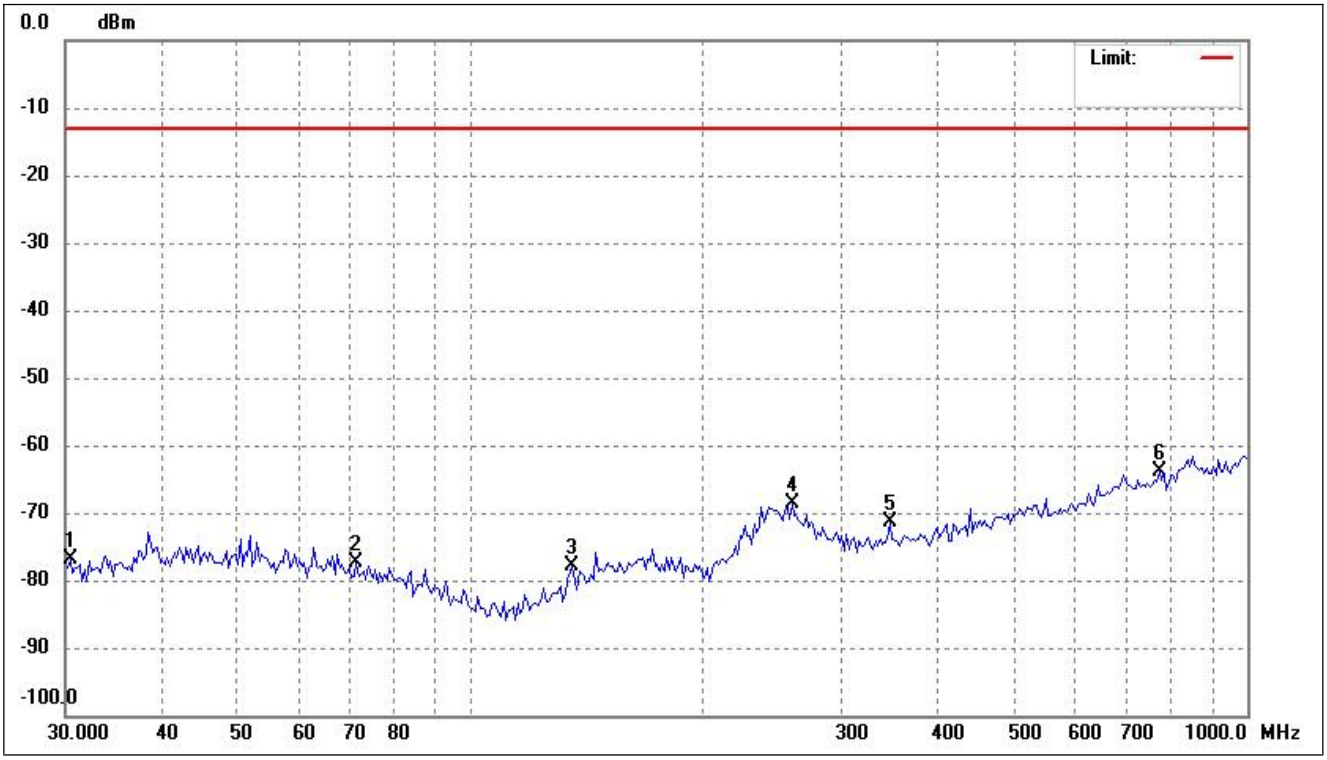
For Cellular Band			
Test Channel	GSM1900	Polarity:	Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	
1	48.0392	-78.22	3.31	-74.91	-13.00	-61.91	ERP
2	91.0574	-74.77	-2.22	-76.99	-13.00	-63.99	ERP
3	156.4258	-78.96	6.52	-72.44	-13.00	-59.44	ERP
4	263.1154	-77.82	1.50	-76.32	-13.00	-63.32	ERP
5	471.4665	-76.85	6.66	-70.19	-13.00	-57.19	ERP
6	771.0475	-75.27	11.92	-63.35	-13.00	-50.35	ERP

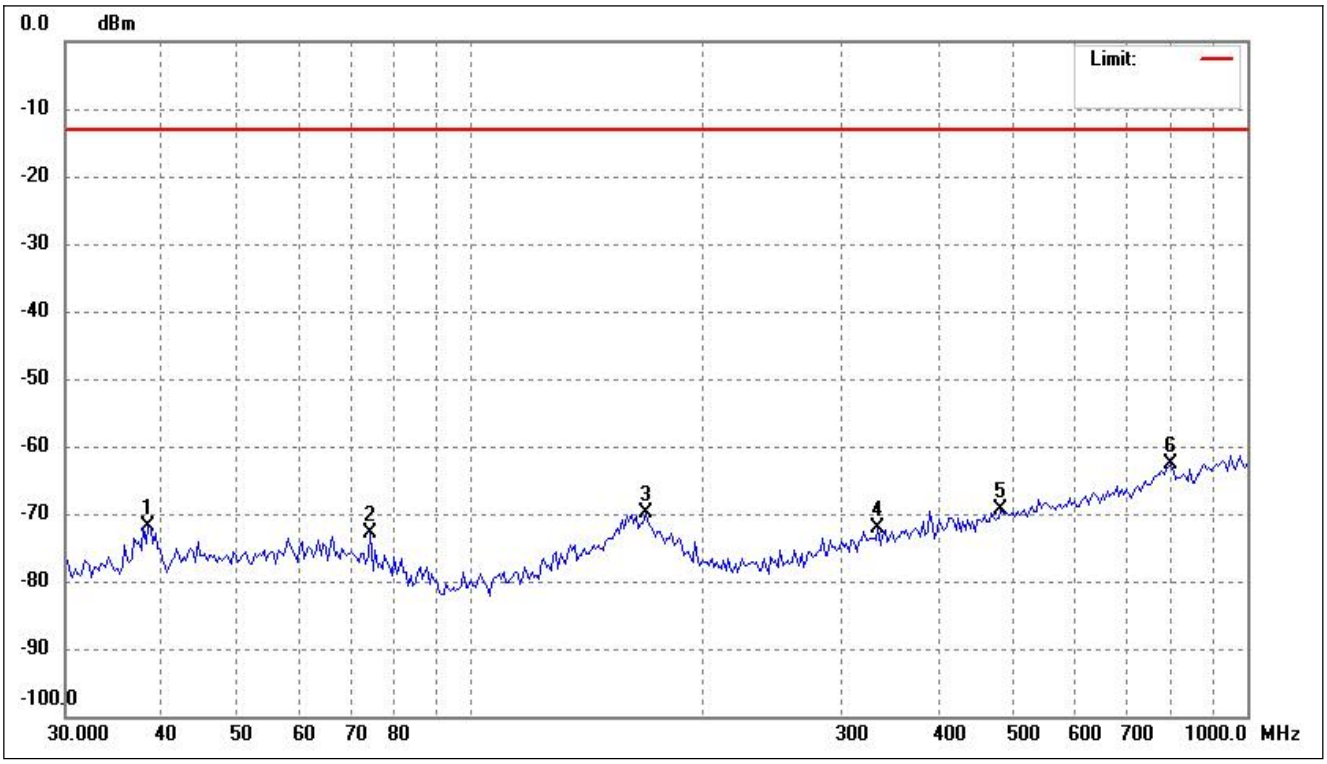
Note: Margin= (Reading+ Correct)- Limit

Test Channel	WCDMA Band V	Polarity:	Horizontal



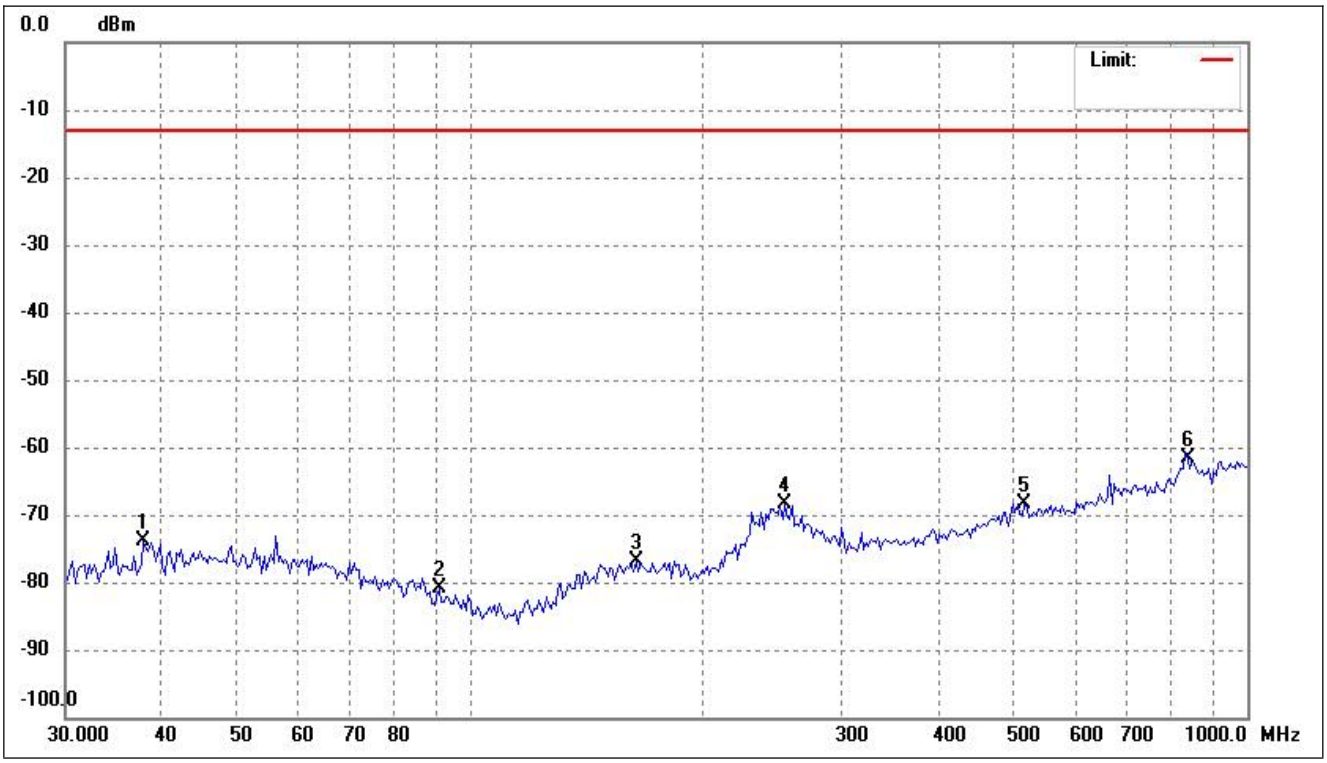
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	
1	30.4246	-78.59	1.64	-76.95	-13.00	-63.95	ERP
2	71.2033	-78.27	0.86	-77.41	-13.00	-64.41	ERP
3	134.9645	-76.35	-1.43	-77.78	-13.00	-64.78	ERP
4	259.4433	-76.44	7.76	-68.68	-13.00	-55.68	ERP
5	346.0739	-75.96	4.50	-71.46	-13.00	-58.46	ERP
6	771.0475	-75.03	11.26	-63.77	-13.00	-50.77	ERP

Test Channel	WCDMA Band V	Polarity:	Vertical



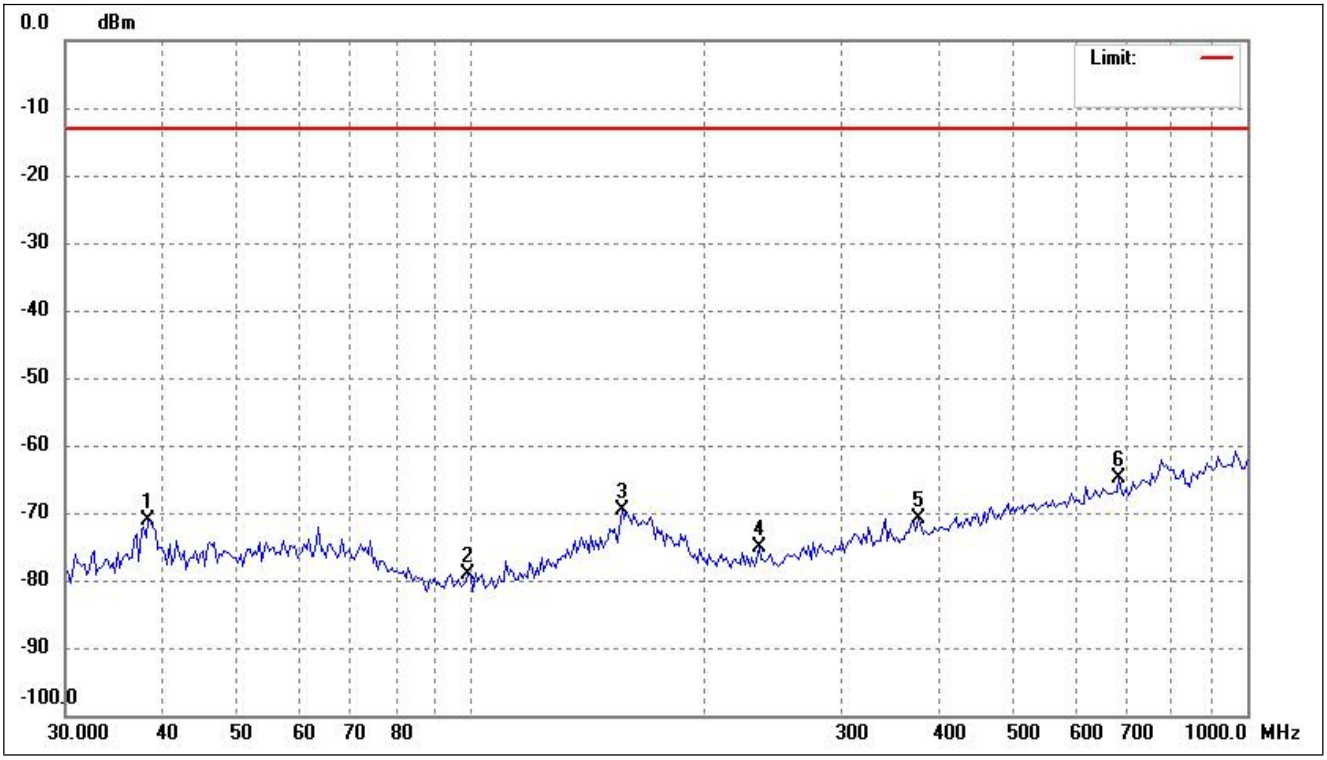
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	38.3651	-74.30	2.39	-71.91	-13.00	-58.91	ERP
2	74.2696	-74.85	1.94	-72.91	-13.00	-59.91	ERP
3	167.8136	-76.33	6.55	-69.78	-13.00	-56.78	ERP
4	334.1255	-76.24	4.01	-72.23	-13.00	-59.23	ERP
5	481.5112	-76.29	6.84	-69.45	-13.00	-56.45	ERP
6	798.6204	-75.25	12.62	-62.63	-13.00	-49.63	ERP

Test Channel	WCDMA Band IV	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	37.8296	-76.11	2.34	-73.77	-13.00	-60.77	ERP
2	91.0574	-78.21	-2.65	-80.86	-13.00	-67.86	ERP
3	163.1622	-77.93	0.98	-76.95	-13.00	-63.95	ERP
4	254.0312	-76.70	8.21	-68.49	-13.00	-55.49	ERP
5	516.5650	-75.70	7.44	-68.26	-13.00	-55.26	ERP
6	838.8870	-75.19	13.50	-61.69	-13.00	-48.69	ERP

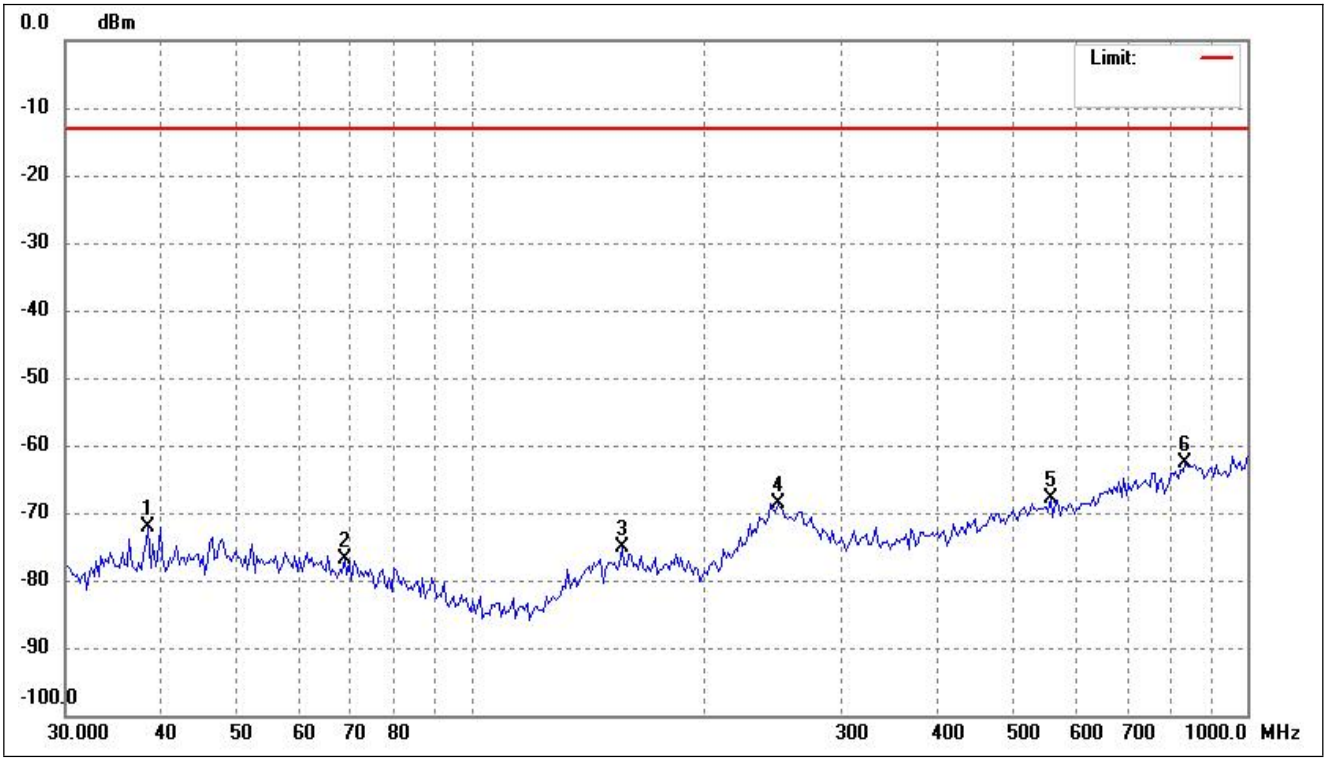
Test Channel	WCDMA Band IV	Polarity:	Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	
1	38.3651	-73.59	2.39	-71.20	-13.00	-58.20	ERP
2	99.0689	-77.33	-1.74	-79.07	-13.00	-66.07	ERP
3	156.4258	-76.14	6.52	-69.62	-13.00	-56.62	ERP
4	235.1346	-76.15	0.97	-75.18	-13.00	-62.18	ERP
5	376.5227	-75.75	4.89	-70.86	-13.00	-57.86	ERP
6	684.2258	-74.82	9.89	-64.93	-13.00	-51.93	ERP

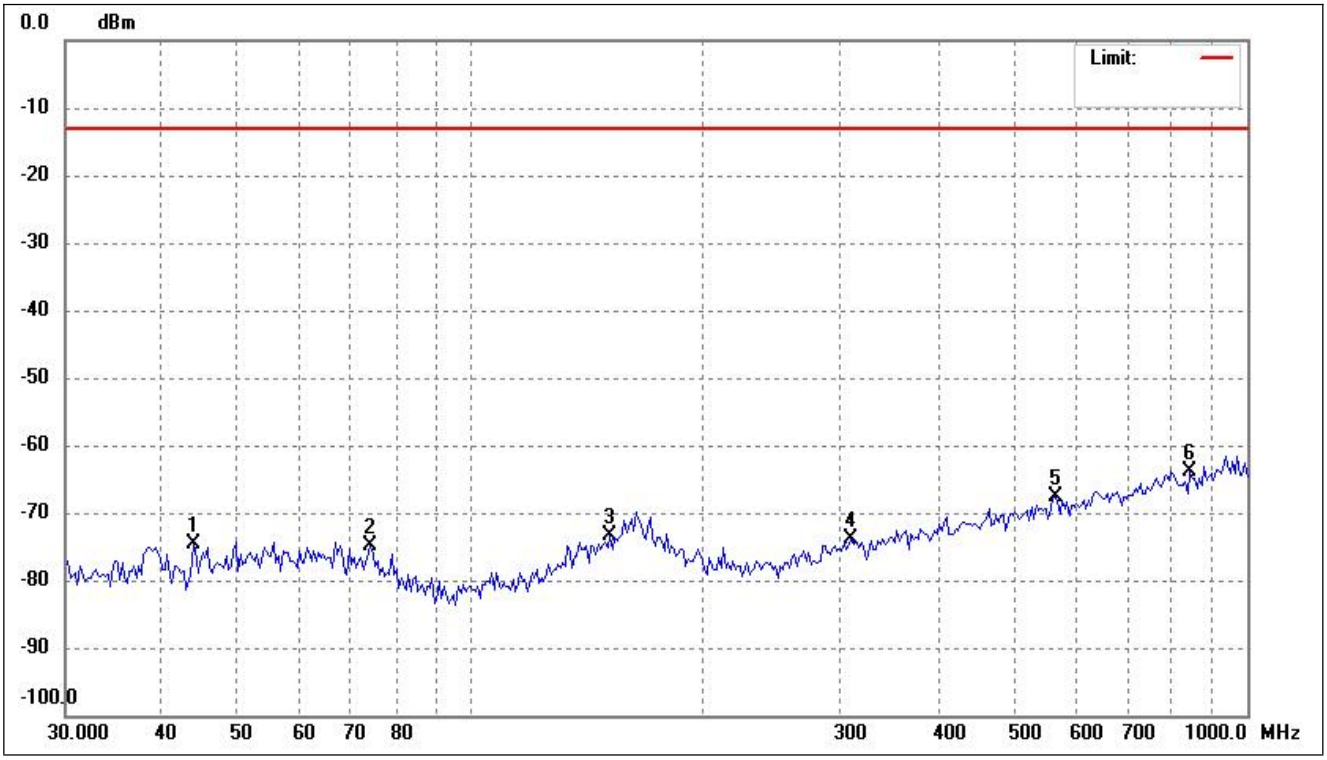
Note: Margin= (Reading+ Correct)- Limit

Test Channel	WCDMA Band II	Polarity:	Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	dB	(dBm)	(dBm)	(dB)	
1	38.3651	-74.54	2.39	-72.15	-13.00	-59.15	ERP
2	68.7449	-78.01	1.22	-76.79	-13.00	-63.79	ERP
3	156.4258	-75.99	0.94	-75.05	-13.00	-62.05	ERP
4	248.7318	-76.96	8.33	-68.63	-13.00	-55.63	ERP
5	558.0787	-75.79	7.81	-67.98	-13.00	-54.98	ERP
6	833.0126	-75.88	13.37	-62.51	-13.00	-49.51	ERP

Test Channel	WCDMA Band II	Polarity:	Vertical

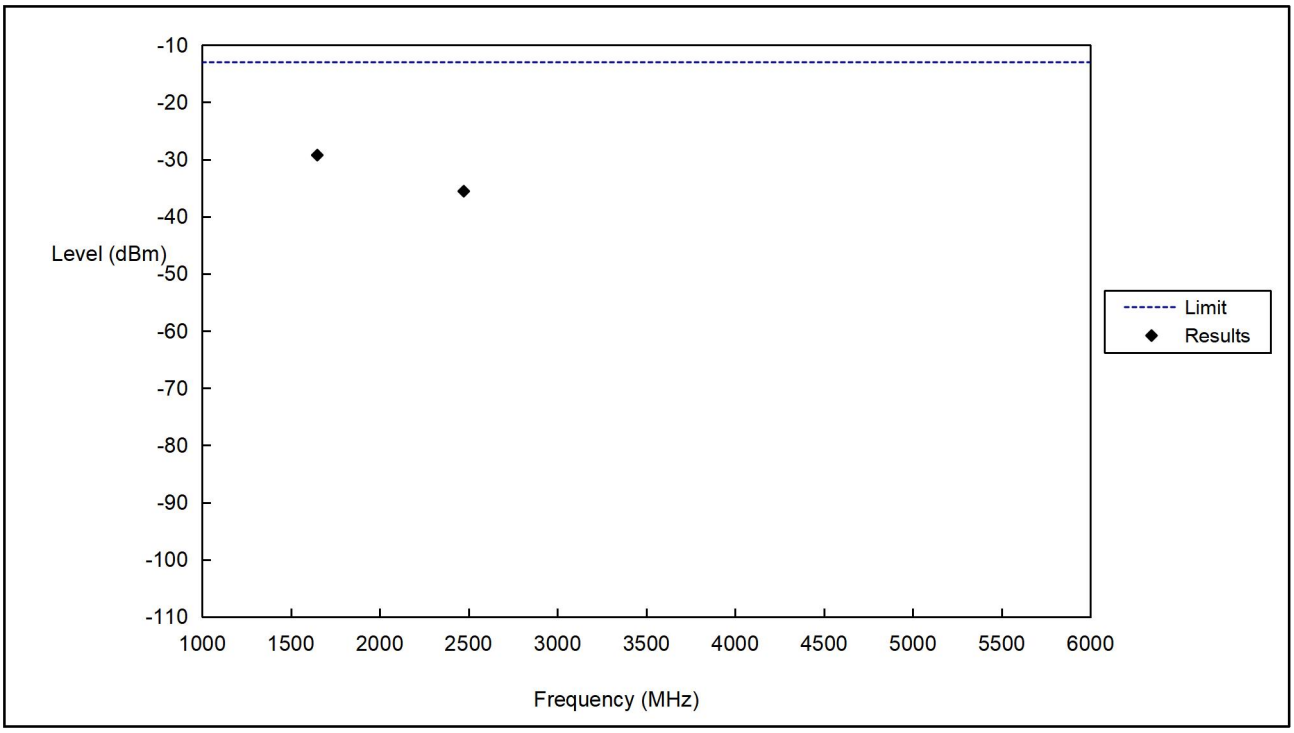


No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBm)	Factor(dB)	(dBm)	(dBm)	(dB)	
1	43.8451	-77.62	2.92	-74.70	-13.00	-61.70	ERP
2	74.2696	-76.78	1.94	-74.84	-13.00	-61.84	ERP
3	151.0251	-77.89	4.40	-73.49	-13.00	-60.49	ERP
4	309.2709	-77.46	3.50	-73.96	-13.00	-60.96	ERP
5	565.9775	-75.82	8.27	-67.55	-13.00	-54.55	ERP
6	844.8027	-74.90	11.14	-63.76	-13.00	-50.76	ERP

Note: Margin= (Reading+ Correct)- Limit

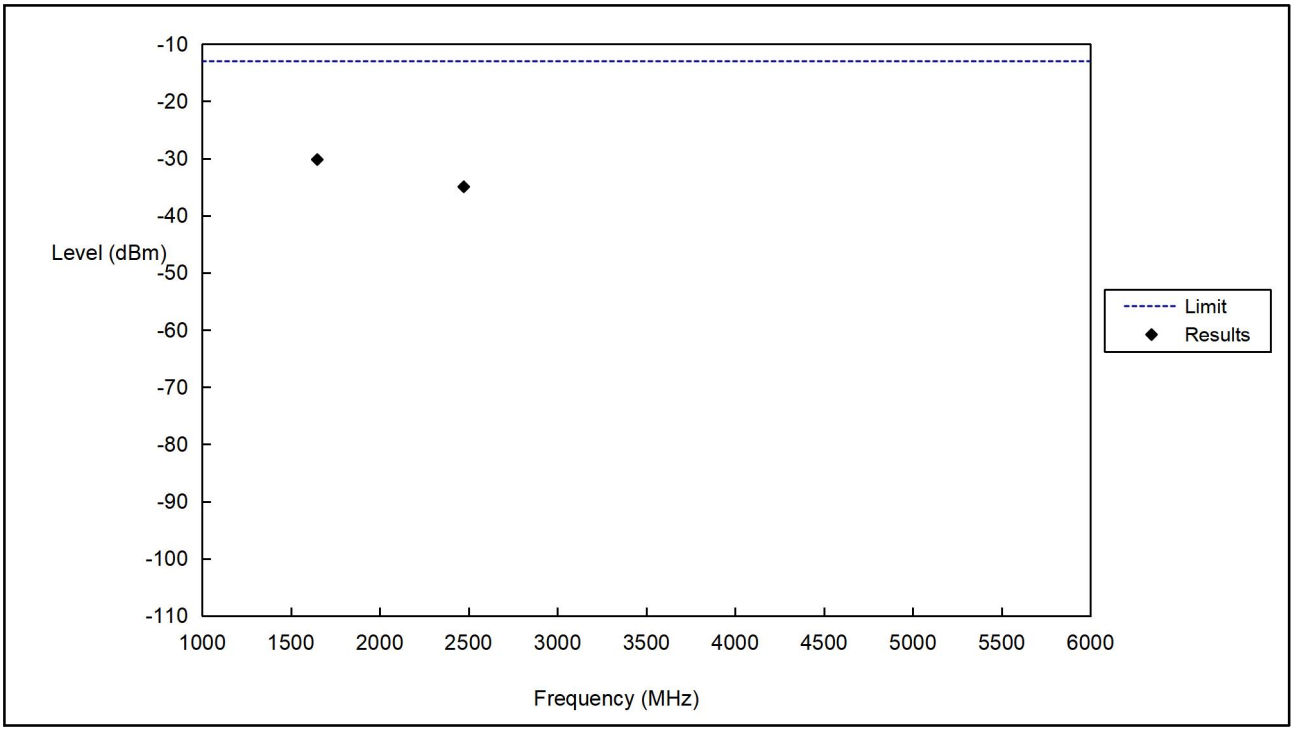
- Spurious Emissions Above 1GHz
- For Cellular Band_GSM850 Mode

Low Channel (824.2MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



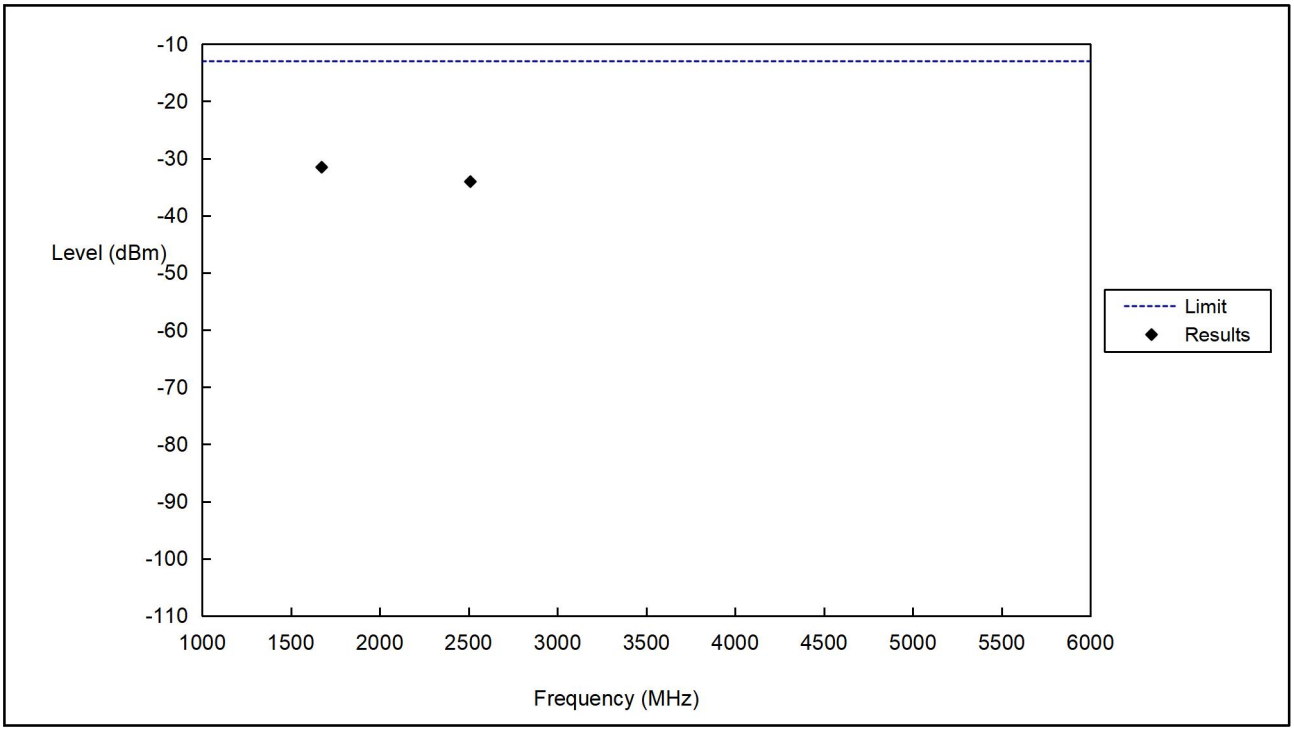
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	1648.4	-29.25	-13	-16.25	RMS
2	2472.6	-35.56	-13	-22.56	RMS

Low Channel (824.2MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



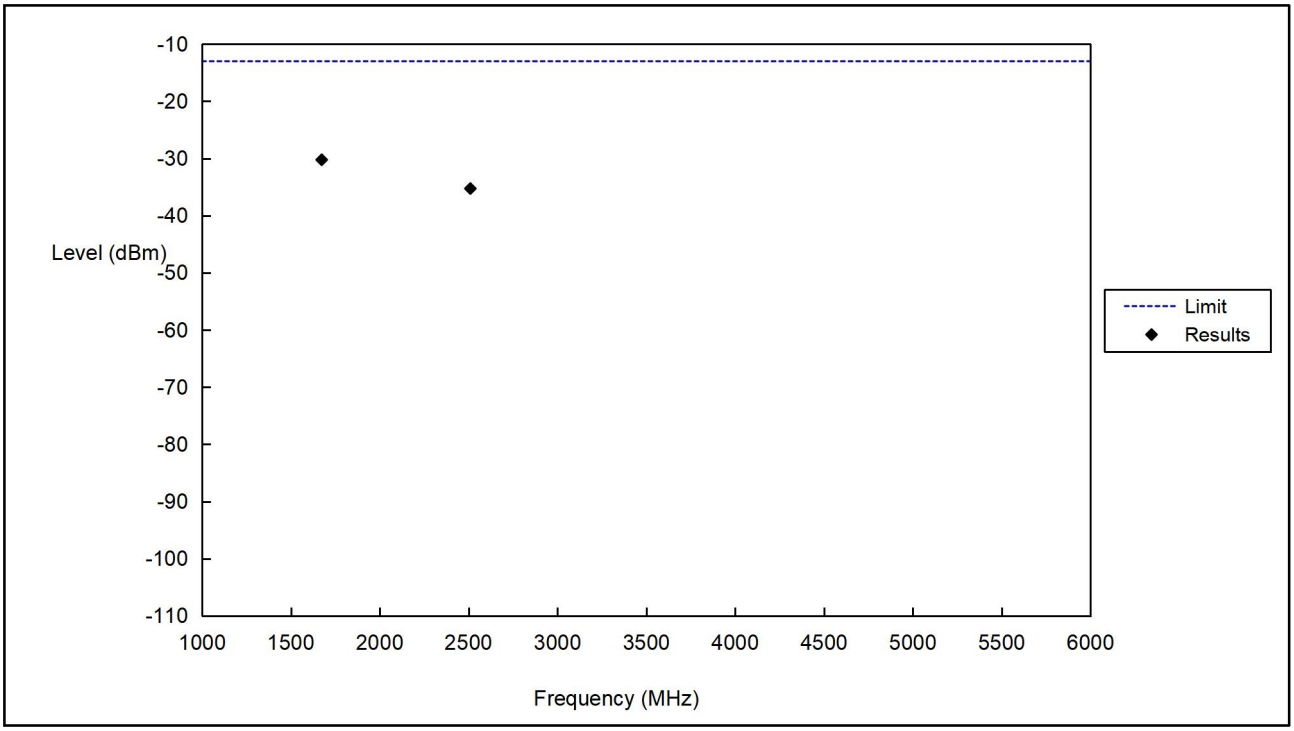
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	1648.4	-30.20	-13	-17.20	RMS
2	2472.6	-34.96	-13	-21.96	RMS

Middle Channel (836.6MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



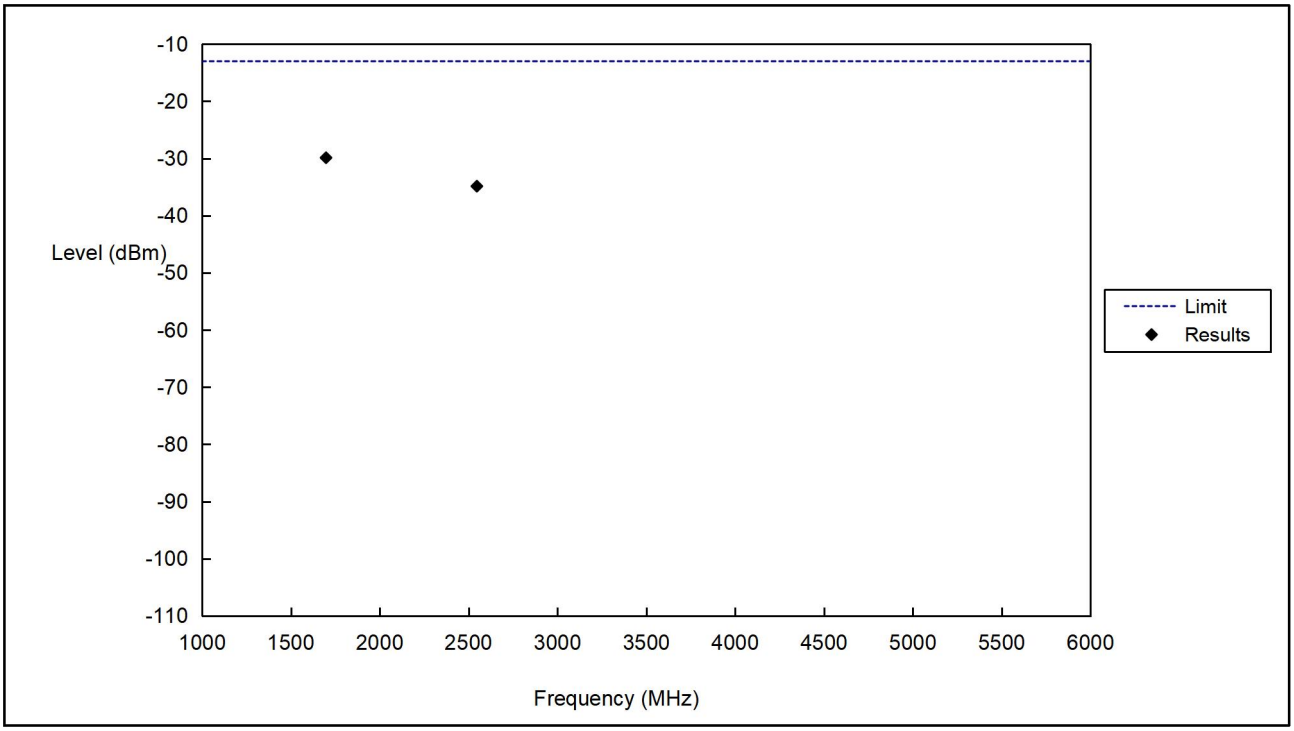
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	1673.2	-31.54	-13	-18.54	RMS
2	2509.8	-34.06	-13	-21.06	RMS

Middle Channel (836.6MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



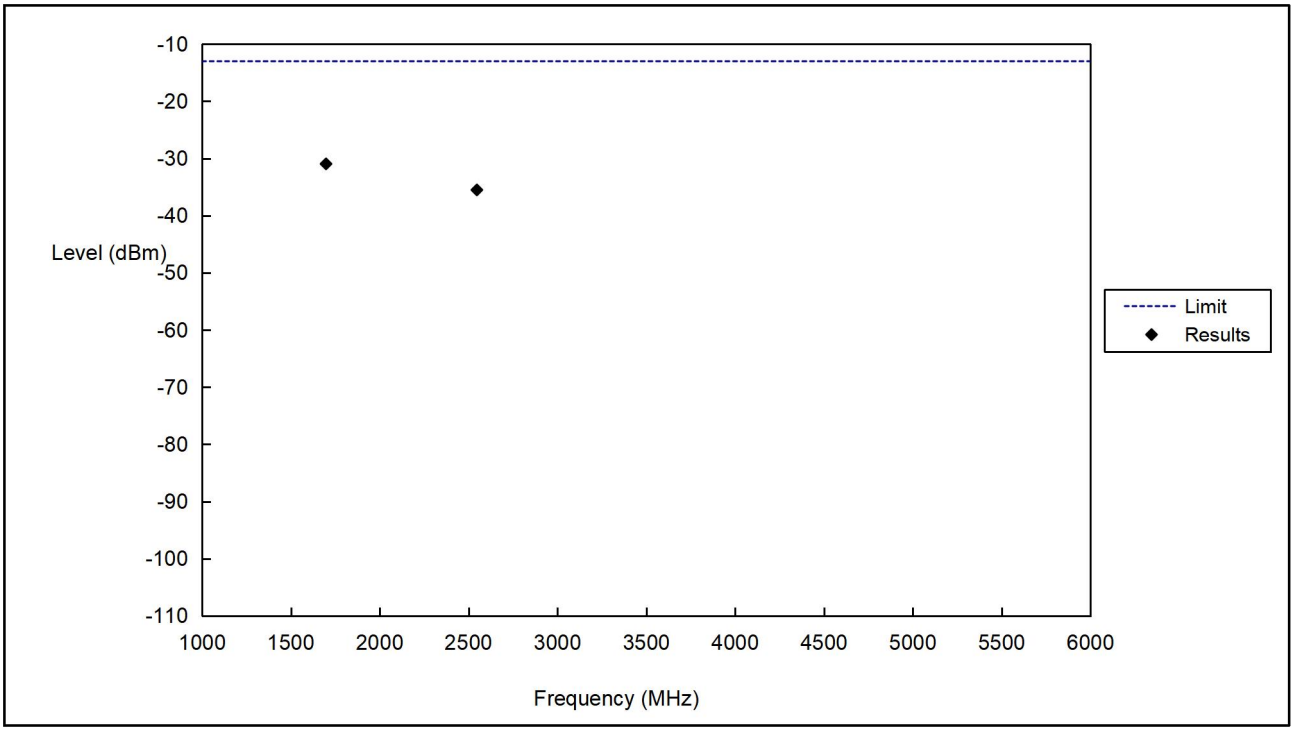
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	1673.2	-30.24	-13	-17.24	RMS
2	2509.8	-35.27	-13	-22.27	RMS

High Channel (848.8MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	1697.6	-29.88	-13	-16.88	RMS
2	2546.4	-34.86	-13	-21.86	RMS

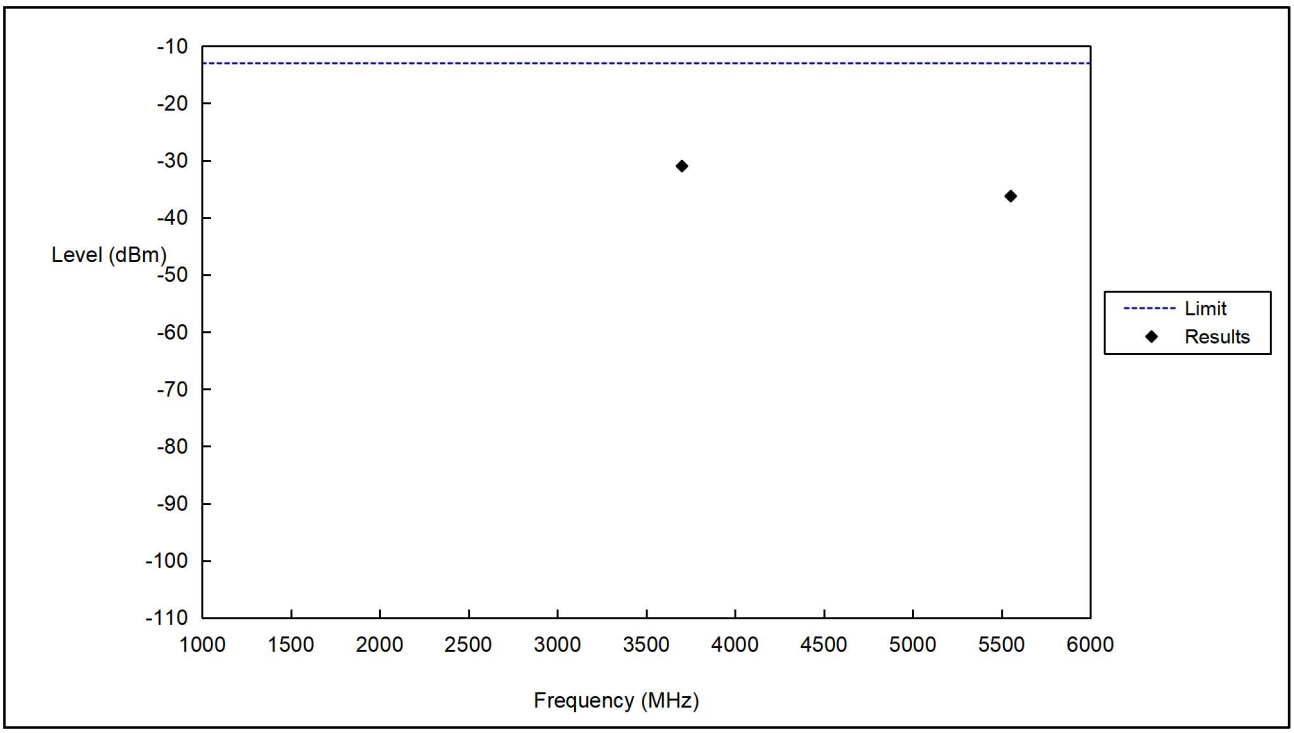
High Channel (848.8MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	1697.6	-30.95	-13	-17.95	RMS
2	2546.4	-35.51	-13	-22.51	RMS

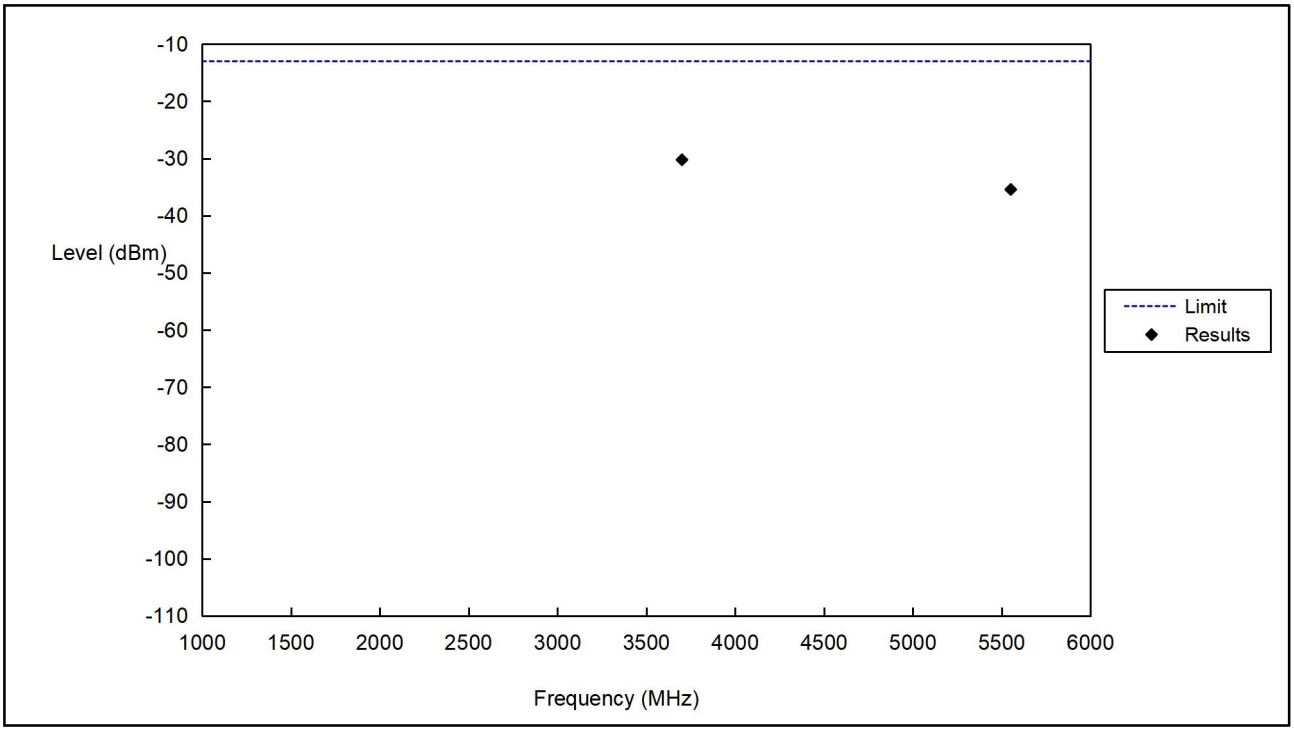
➢ For PCS Band_GSM1900 Mode

Low Channel (1850.2MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



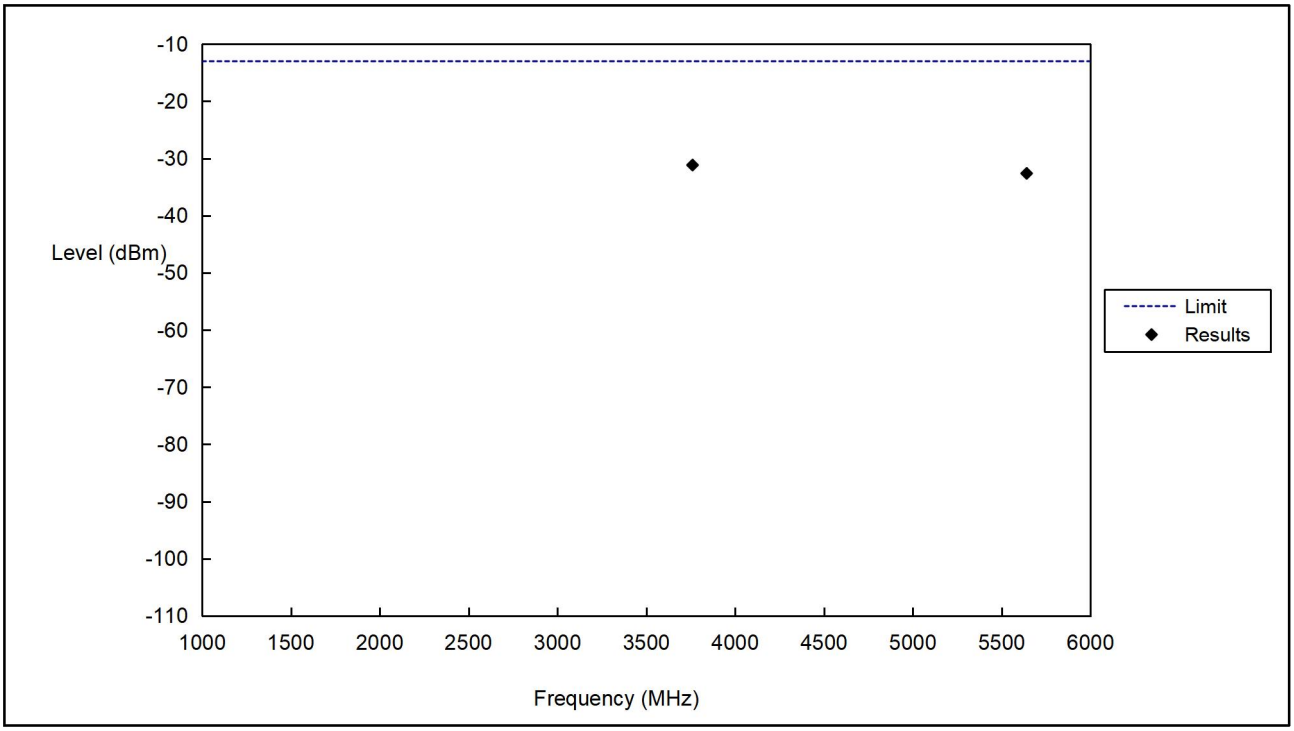
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3700.4	-30.99	-13	-17.99	RMS
2	5550.6	-36.25	-13	-23.25	RMS

Low Channel (1850.2MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



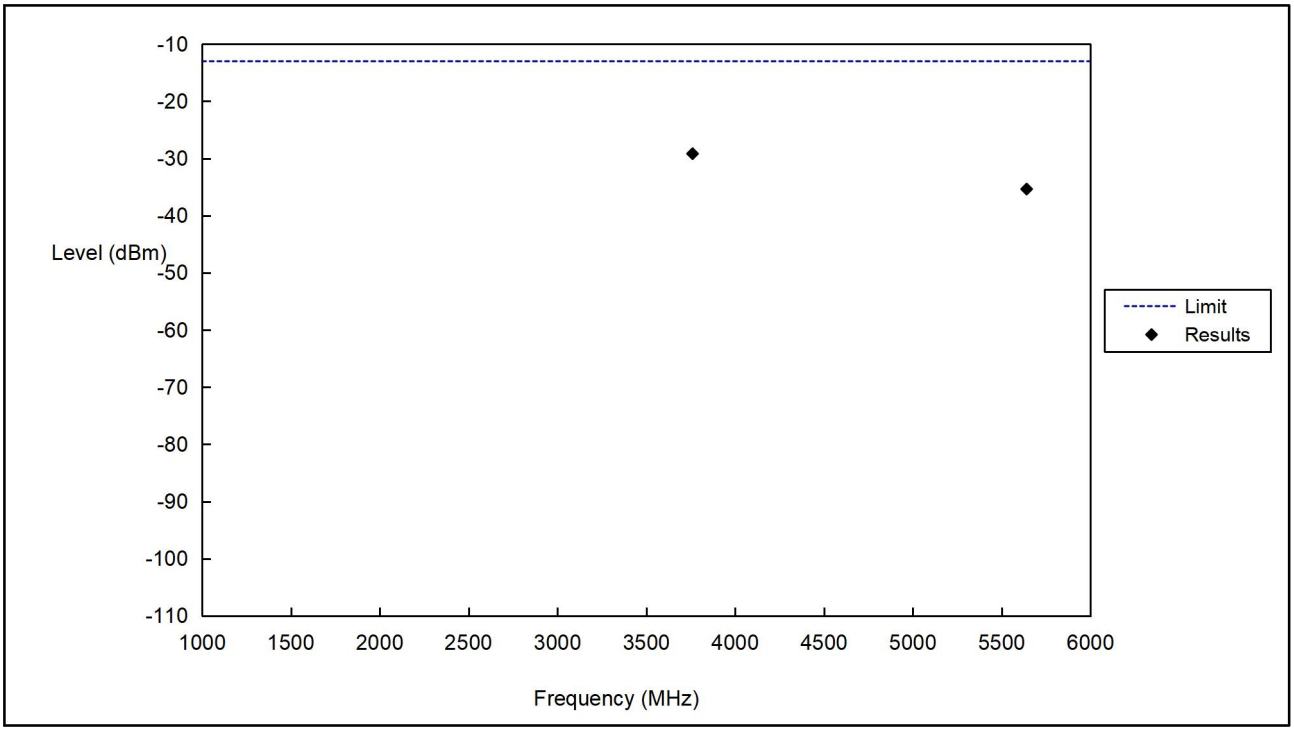
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3700.4	-30.24	-13	-17.24	RMS
2	5550.6	-35.43	-13	-22.43	RMS

Middle Channel (1880MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



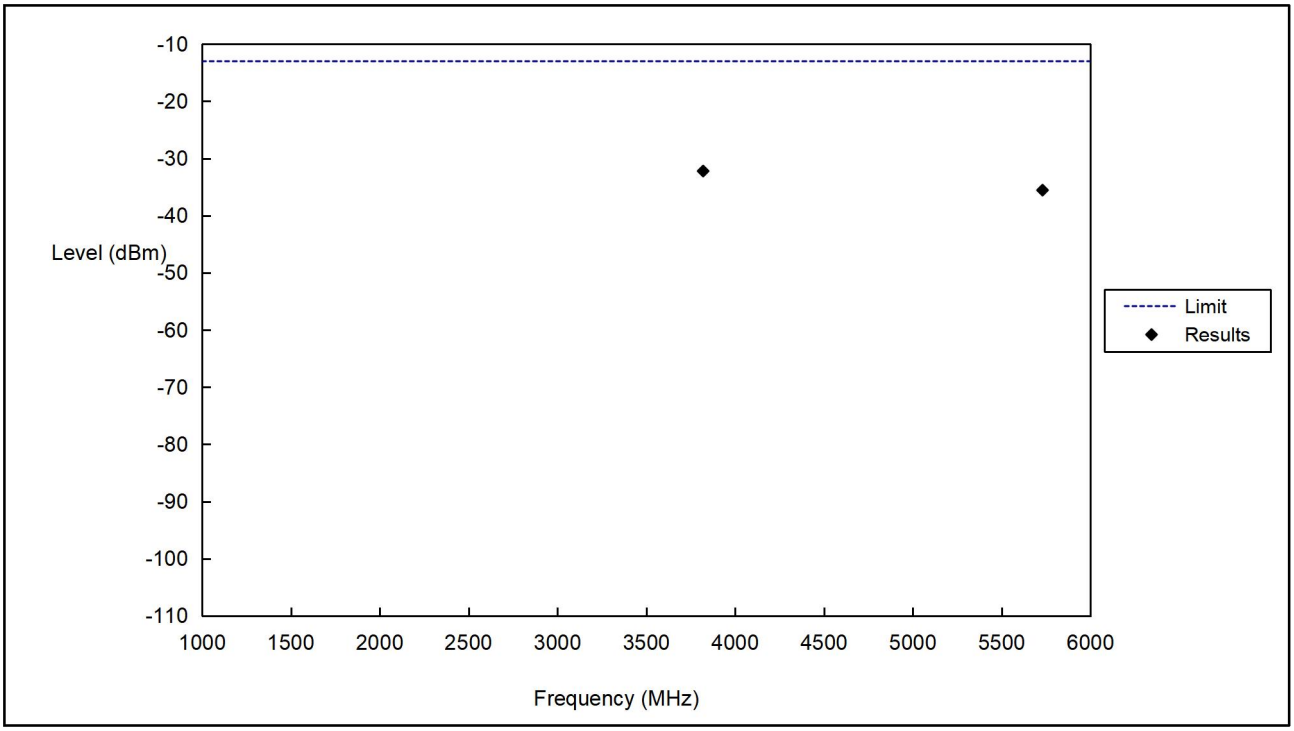
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3760.0	-31.16	-13	-18.16	RMS
2	5640.0	-32.62	-13	-19.62	RMS

Middle Channel (1880MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



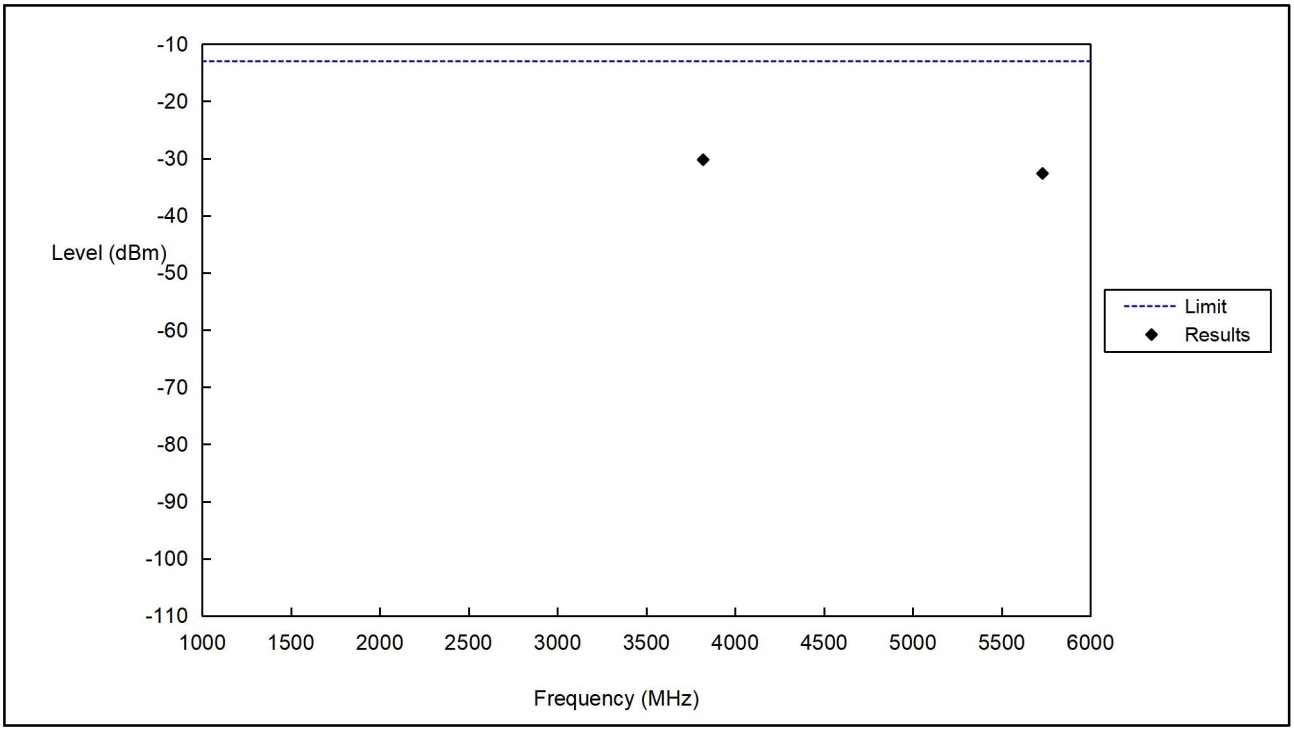
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3760.0	-29.17	-13	-16.17	RMS
2	5640.0	-35.36	-13	-22.36	RMS

High Channel (1909.8MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3819.6	-32.21	-13	-19.21	RMS
2	5729.4	-35.55	-13	-22.55	RMS

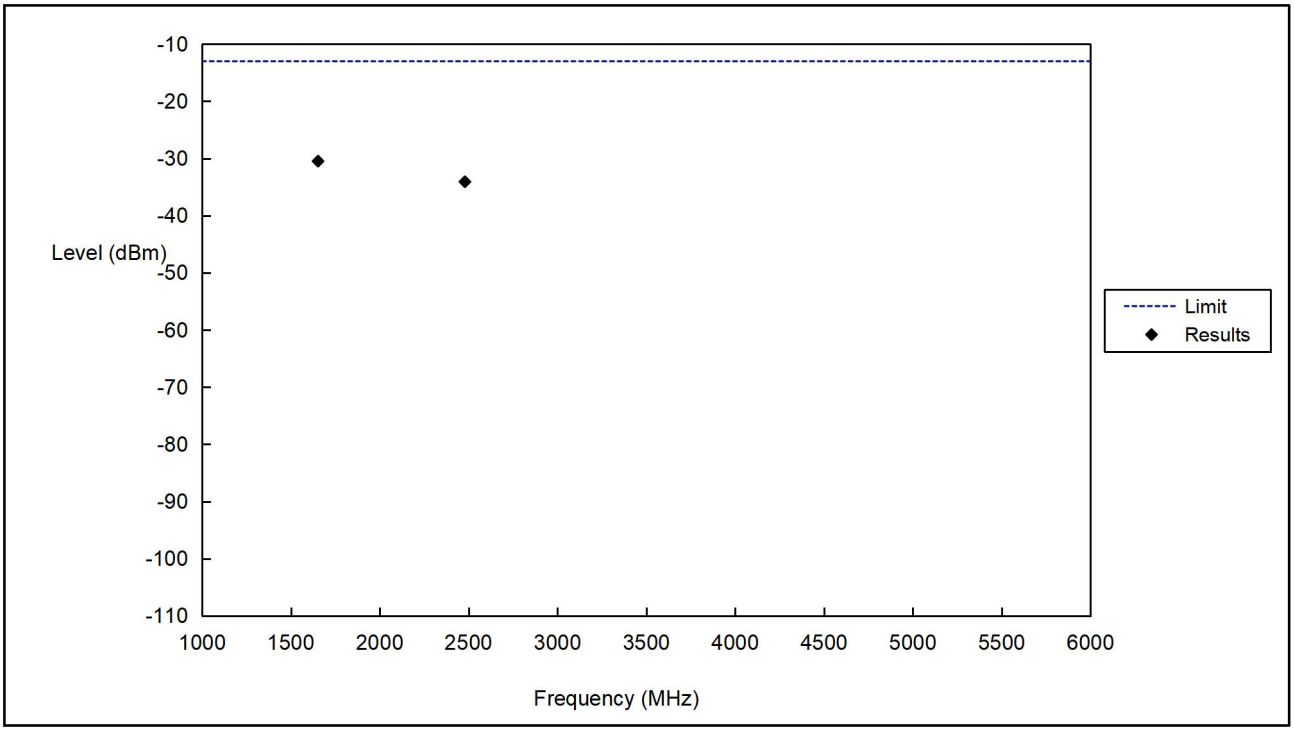
High Channel (1909.8MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3819.6	-30.23	-13	-17.23	RMS
2	5729.4	-32.63	-13	-19.63	RMS

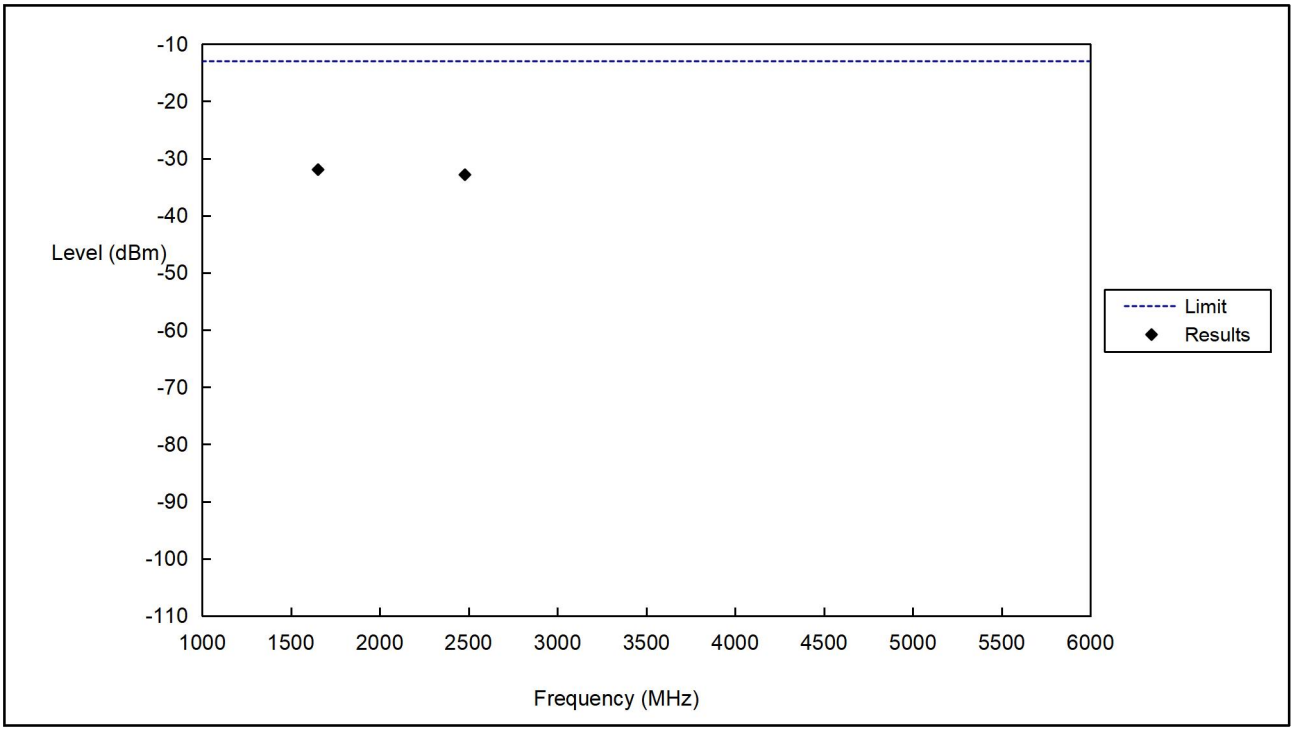
➢ For WCDMA Band V Mode

Low Channel (826.4MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



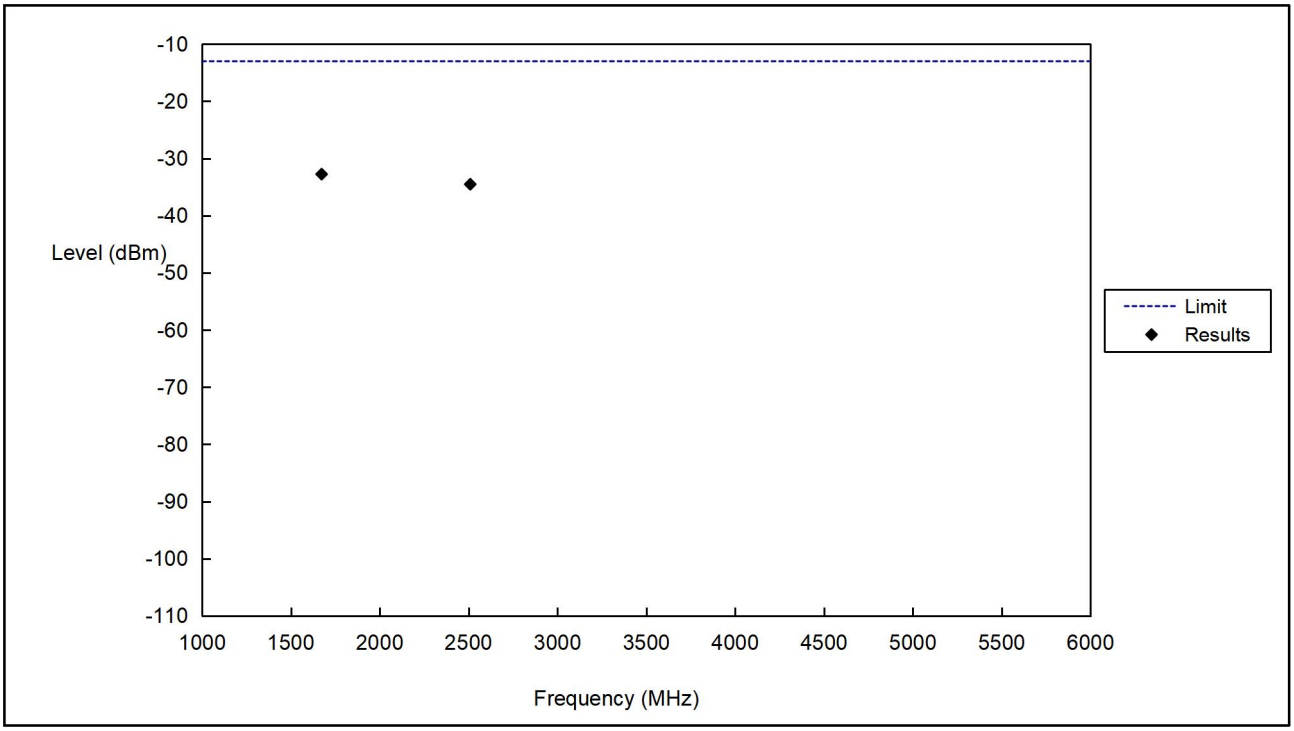
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	1652.8	-30.48	-13	-17.48	RMS
2	2479.2	-34.08	-13	-21.08	RMS

Low Channel (826.4MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



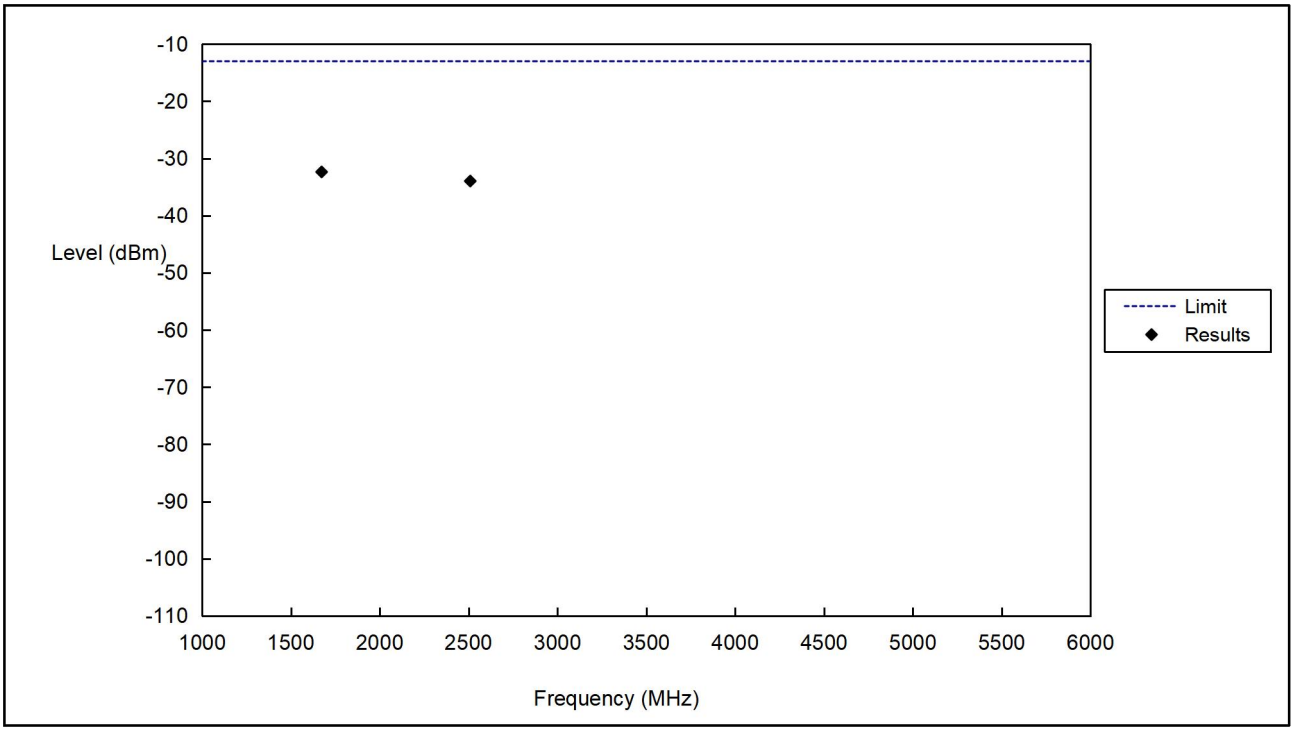
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	1652.8	-31.96	-13	-18.96	RMS
2	2479.2	-32.85	-13	-19.85	RMS

Middle Channel (836.6MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



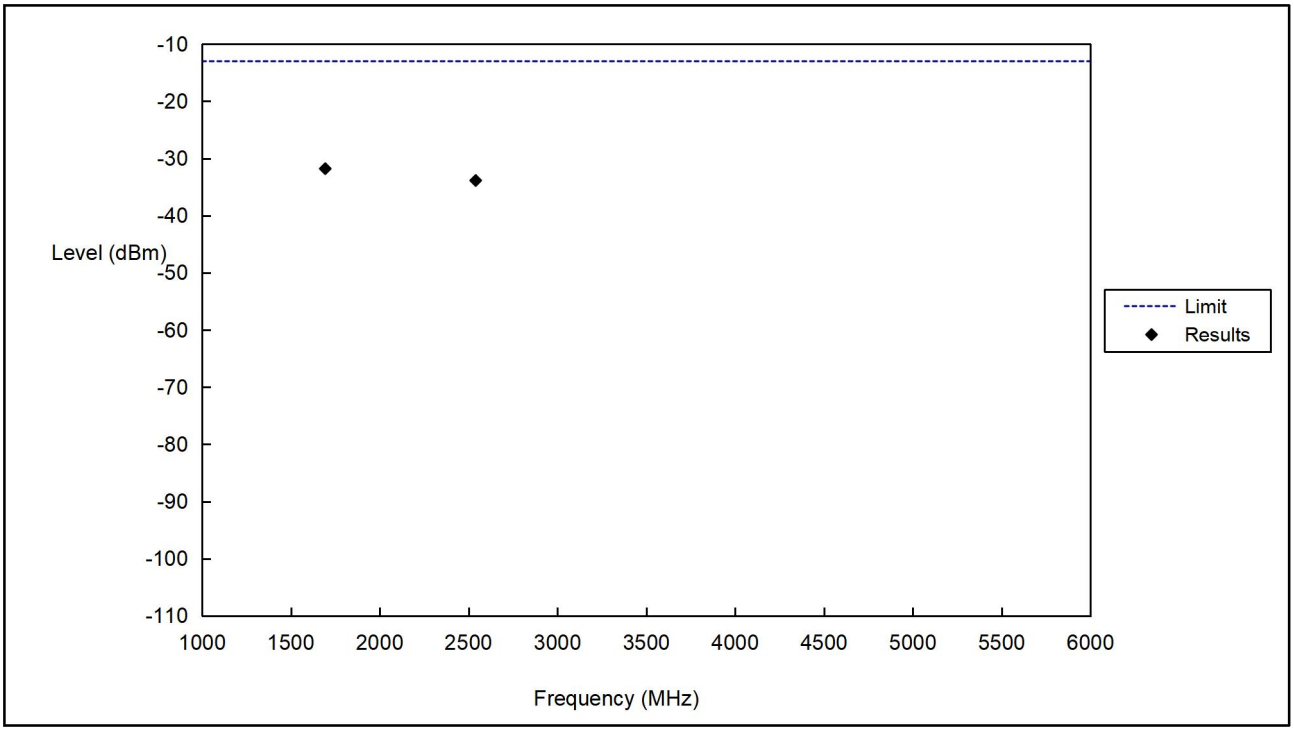
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	1672.8	-32.75	-13	-19.75	RMS
2	2509.2	-34.52	-13	-21.52	RMS

Middle Channel (836.6MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



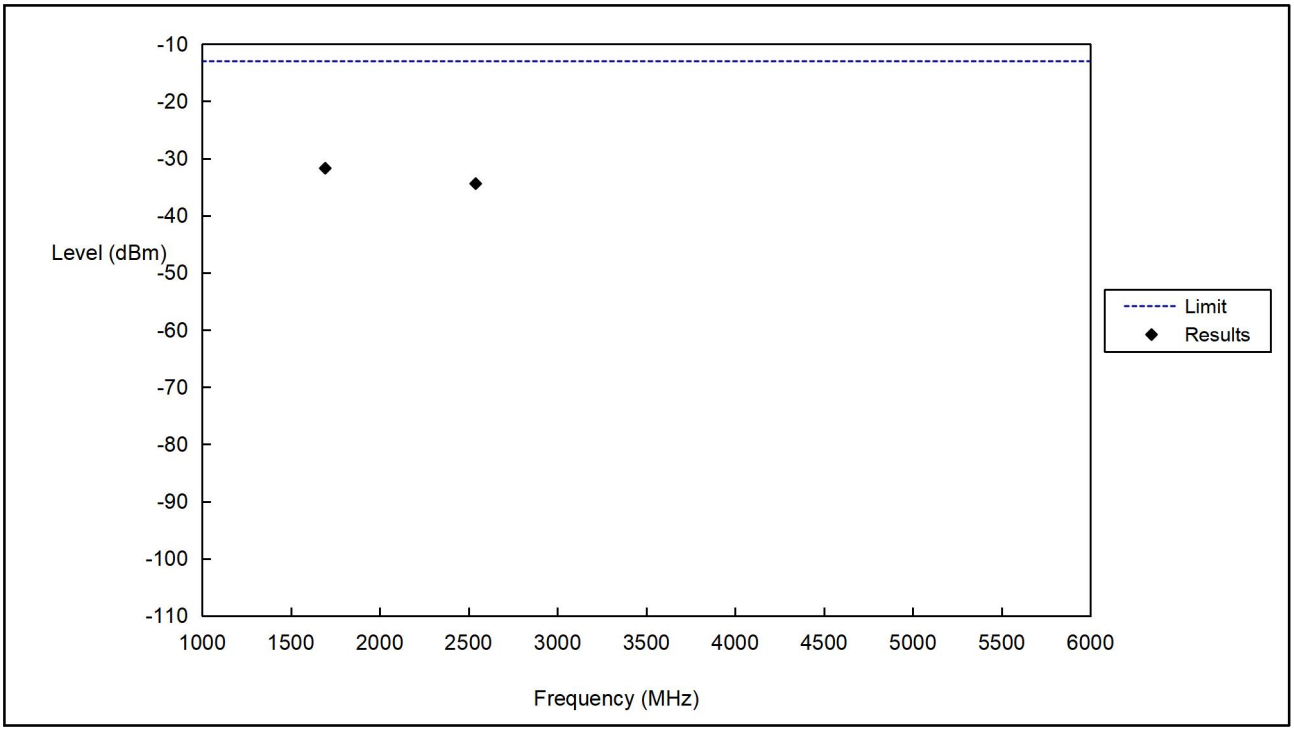
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	1672.8	-32.36	-13	-19.36	RMS
2	2509.2	-33.96	-13	-20.96	RMS

High Channel (846.6MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	1693.2	-31.79	-13	-18.79	RMS
2	2539.8	-33.86	-13	-20.86	RMS

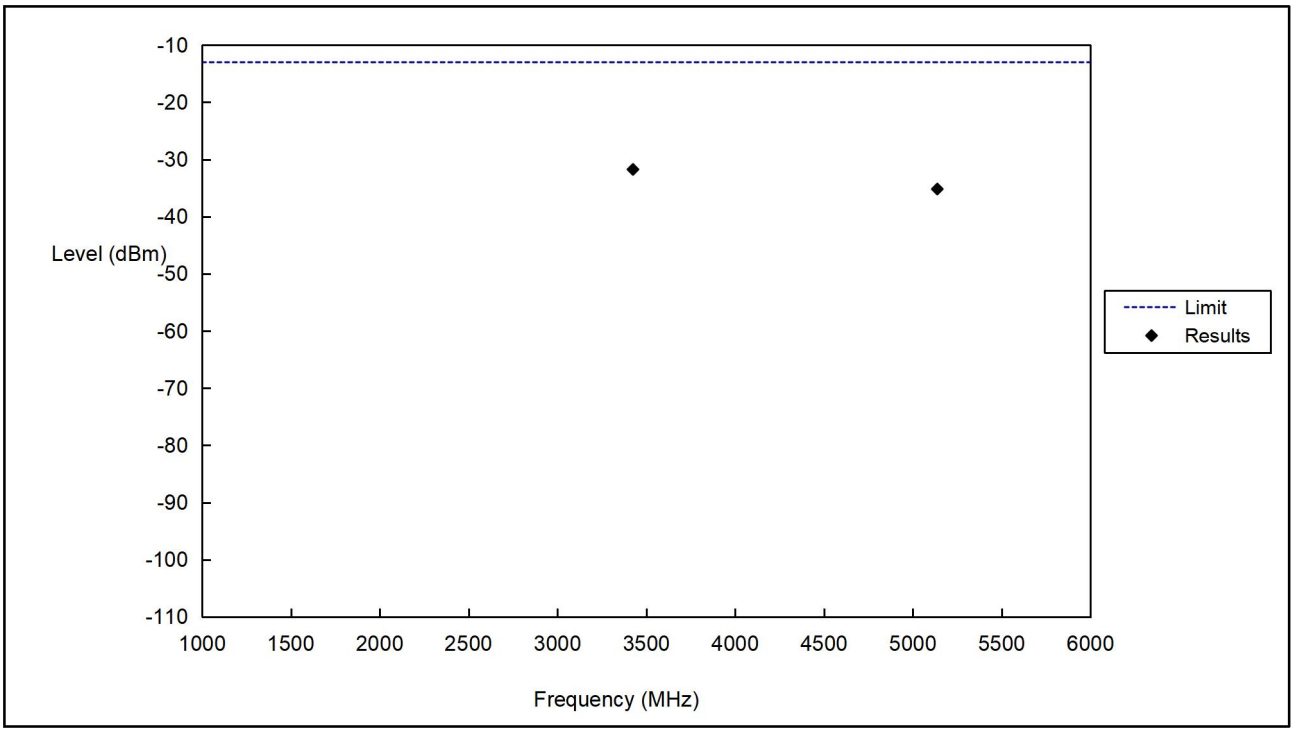
High Channel (846.6MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	1693.2	-31.72	-13	-18.72	RMS
2	2539.8	-34.41	-13	-21.41	RMS

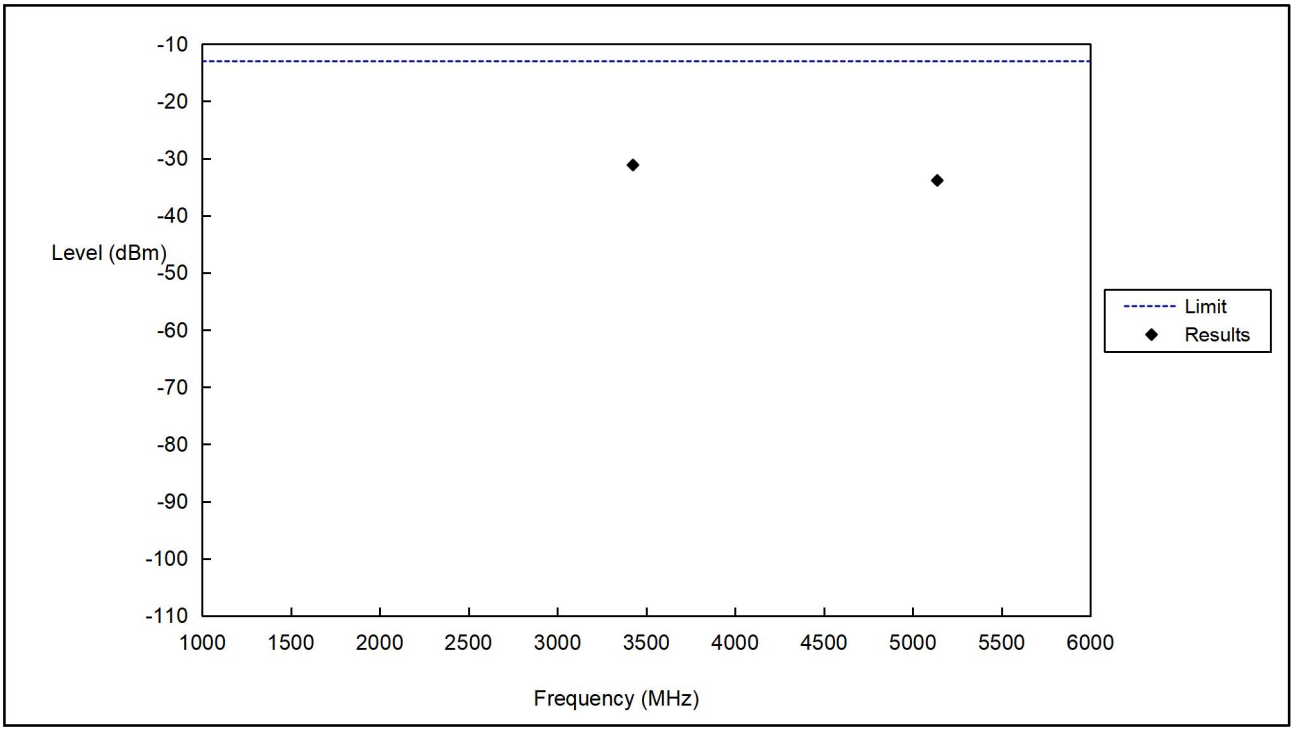
➢ For WCDMA Band IV Mode

Low Channel (1712.4MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



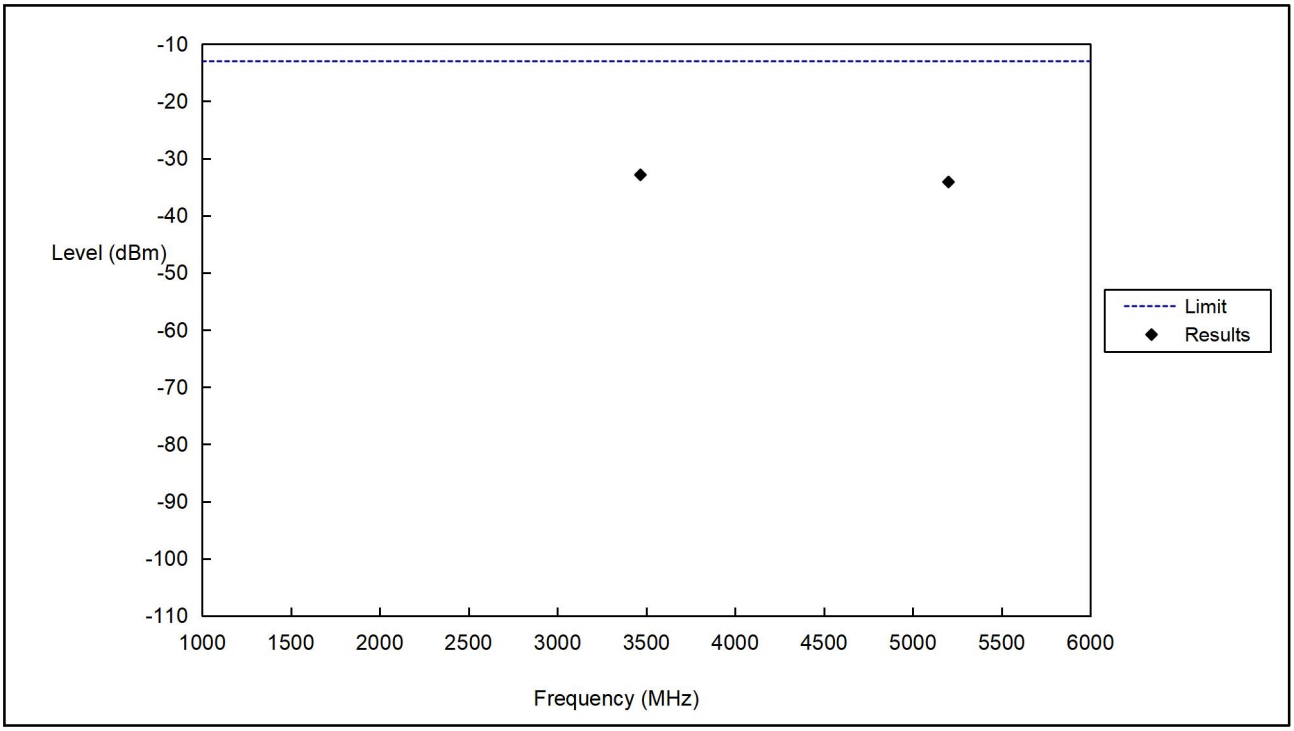
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3424.8	-31.75	-13	-18.75	RMS
2	5137.2	-35.18	-13	-22.18	RMS

Low Channel (1712.4MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



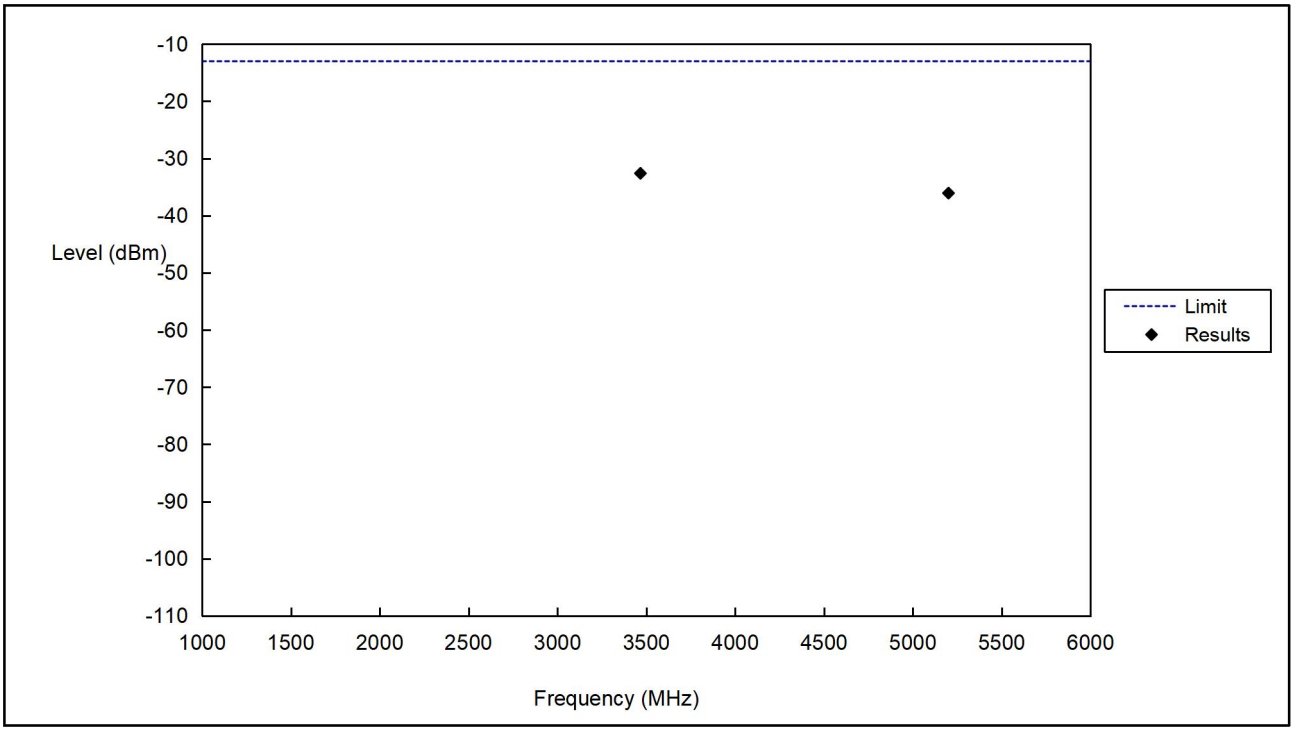
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3424.8	-31.15	-13	-18.15	RMS
2	5137.2	-33.85	-13	-20.85	RMS

Middle Channel (1732.4MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



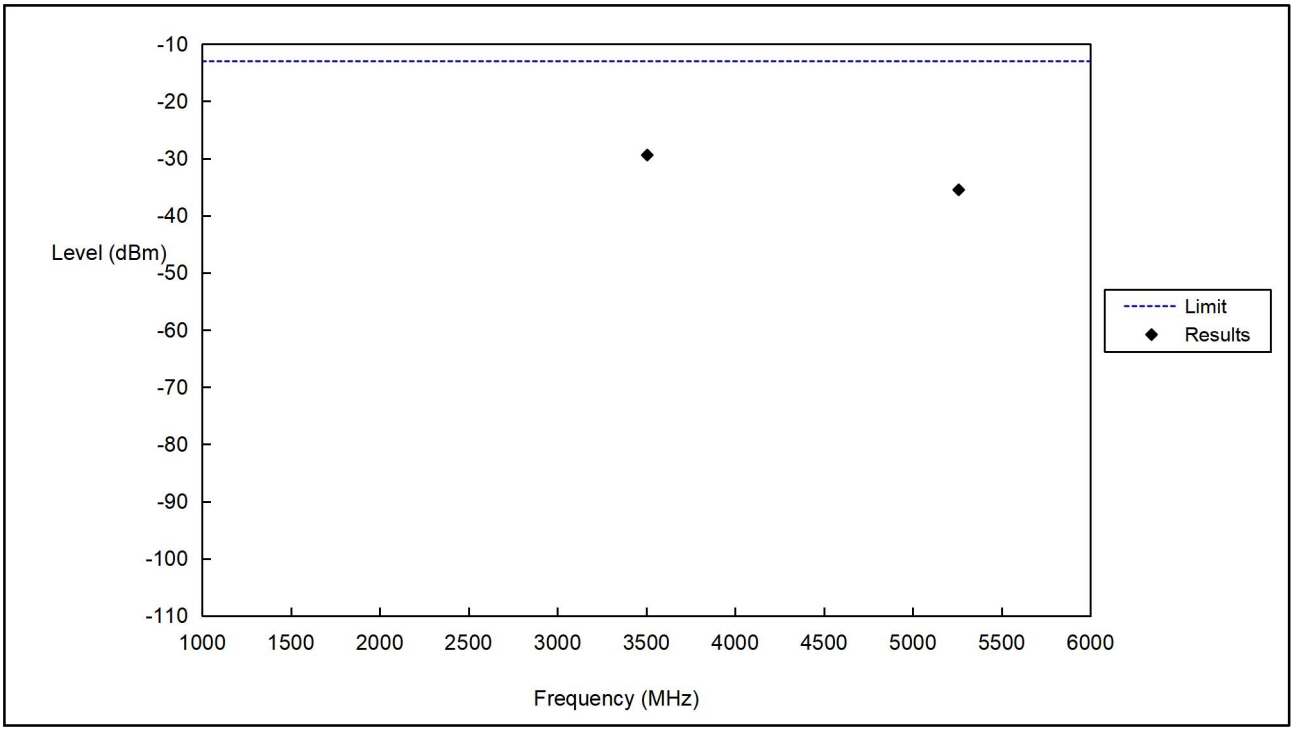
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3466.8	-32.87	-13	-19.87	RMS
2	5200.2	-34.12	-13	-21.12	RMS

Middle Channel (1732.4MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



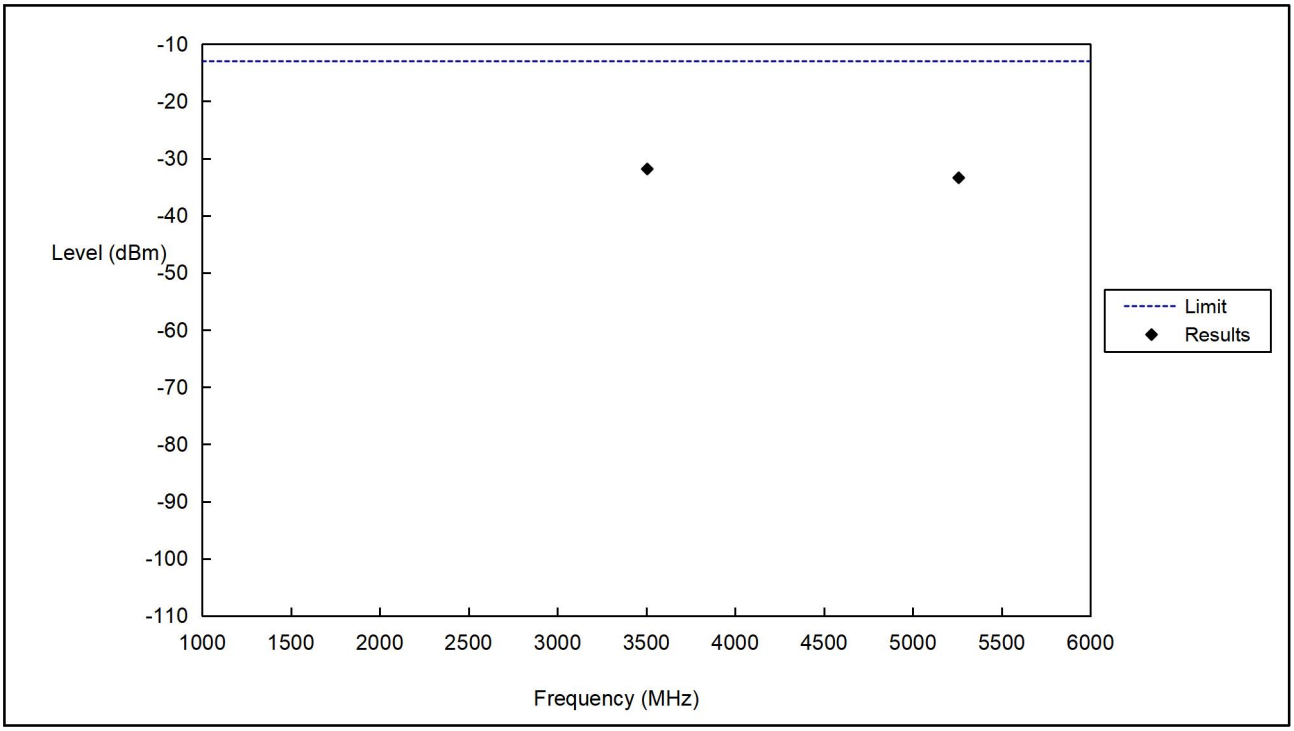
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3466.8	-32.61	-13	-19.61	RMS
2	5200.2	-36.07	-13	-23.07	RMS

High Channel (1752.6MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3505.2	-29.41	-13	-16.41	RMS
2	5257.8	-35.49	-13	-22.49	RMS

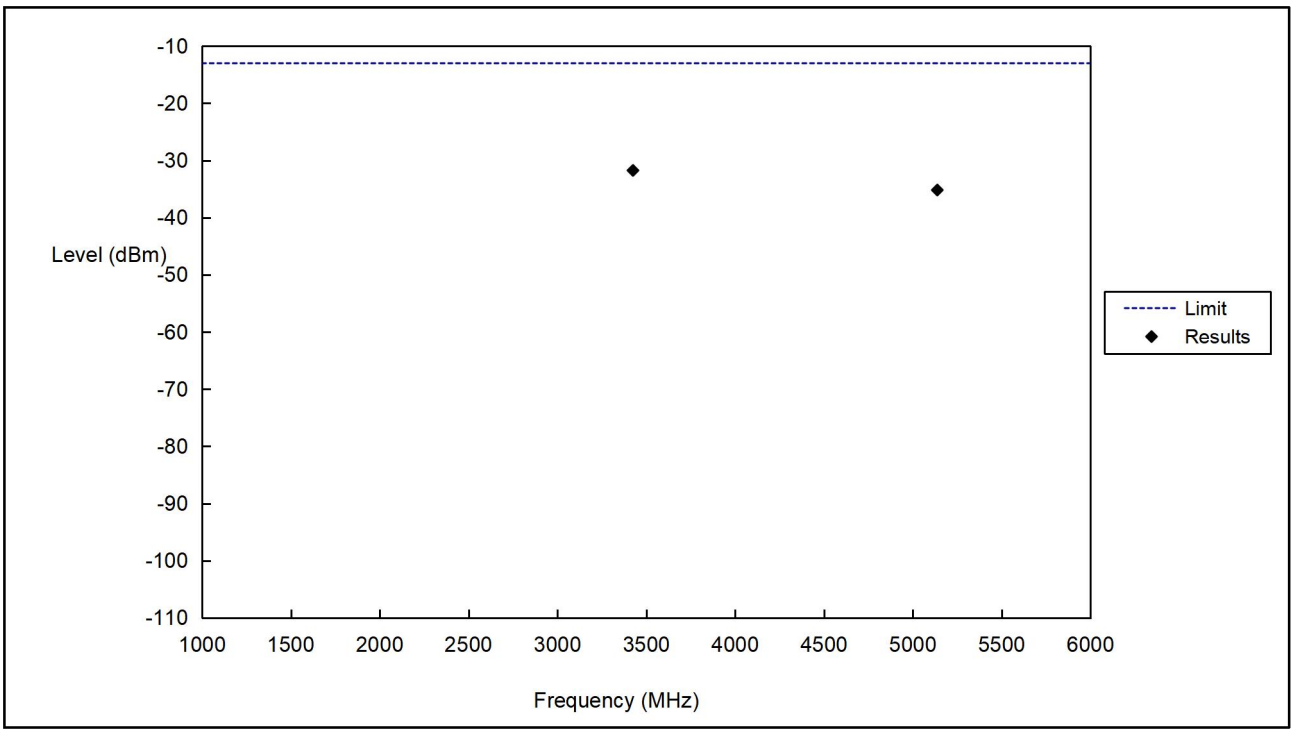
High Channel (1752.6MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3505.2	-31.85	-13	-18.85	RMS
2	5257.8	-33.39	-13	-20.39	RMS

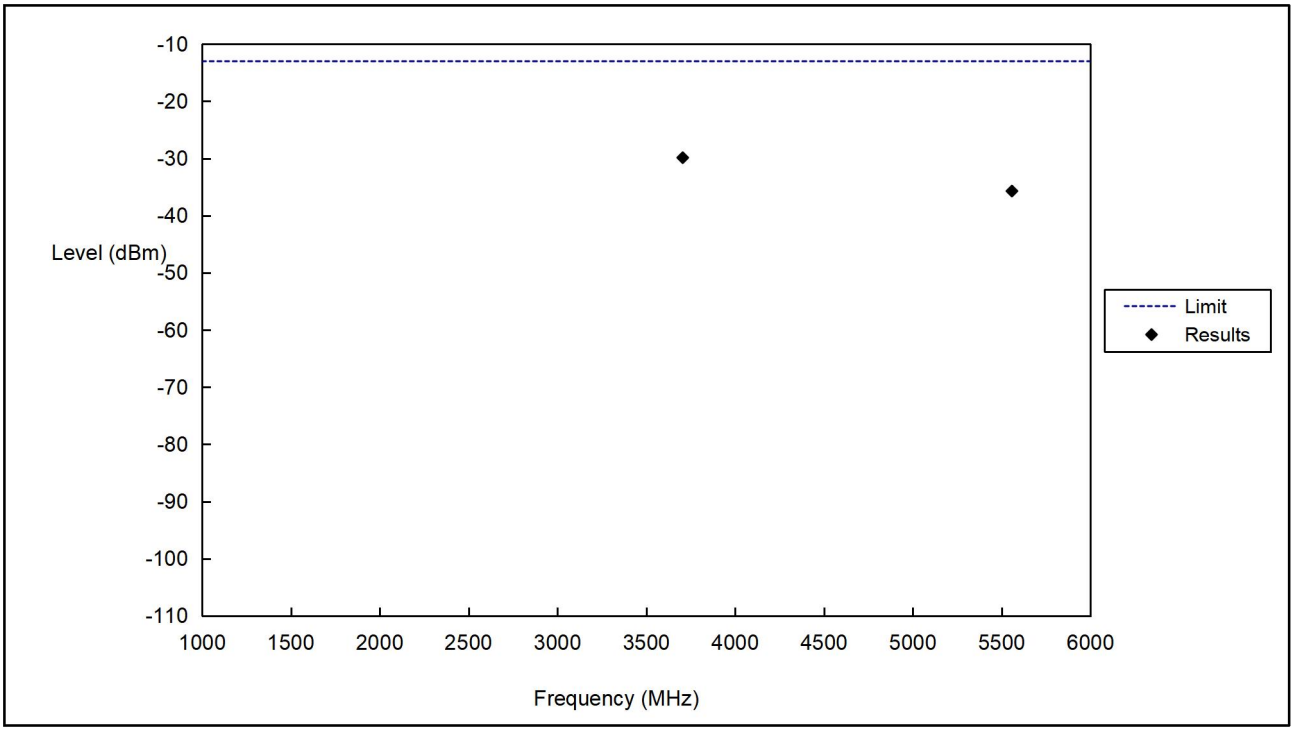
➢ For WCDMA Band II Mode

Low Channel (1852.4MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



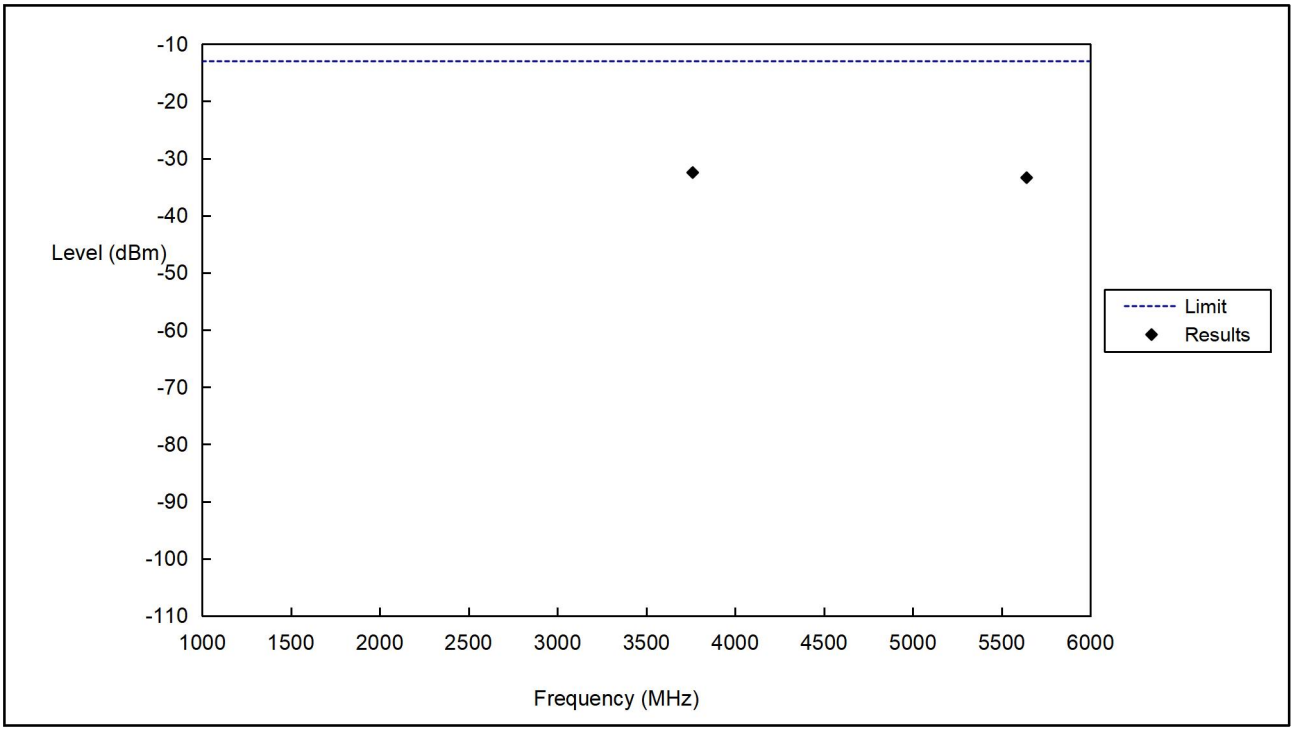
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3704.8	-31.84	-13	-18.84	RMS
2	5557.2	-33.13	-13	-20.13	RMS

Low Channel (1852.4MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



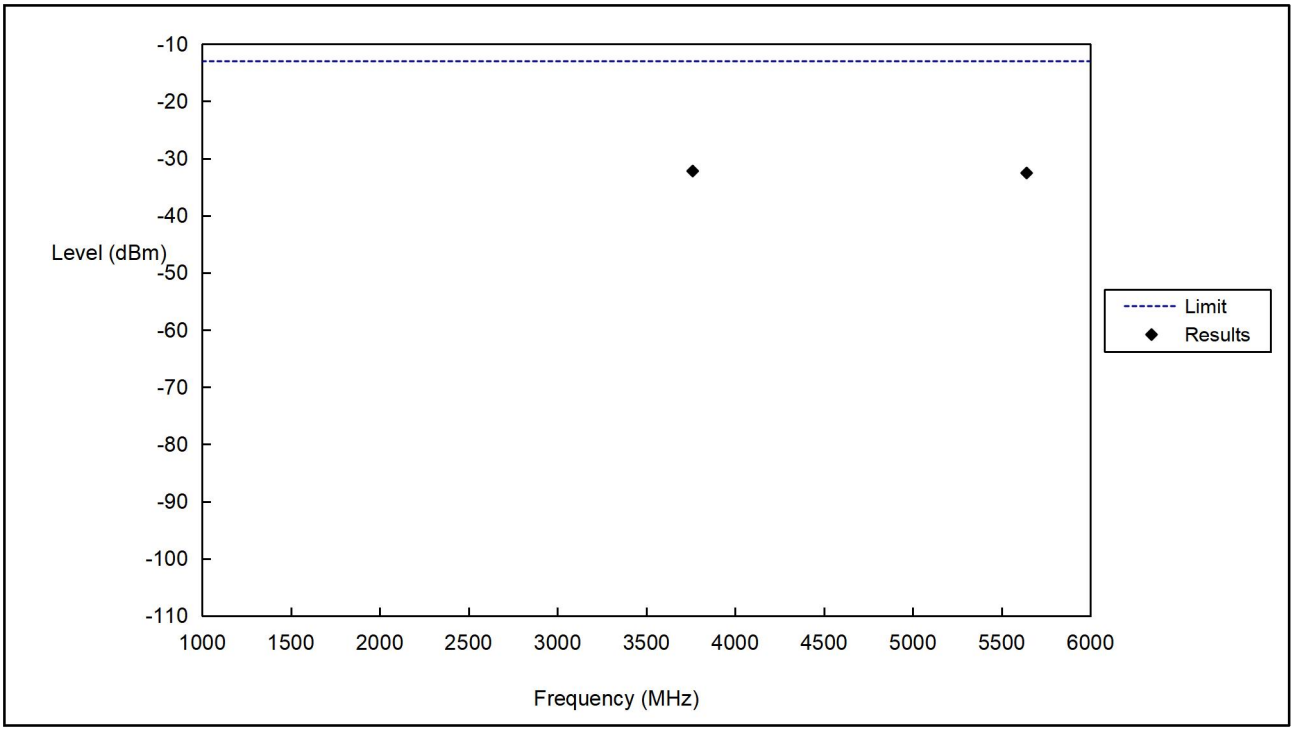
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3704.8	-29.87	-13	-16.87	RMS
2	5557.2	-35.71	-13	-22.71	RMS

Middle Channel (1880MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



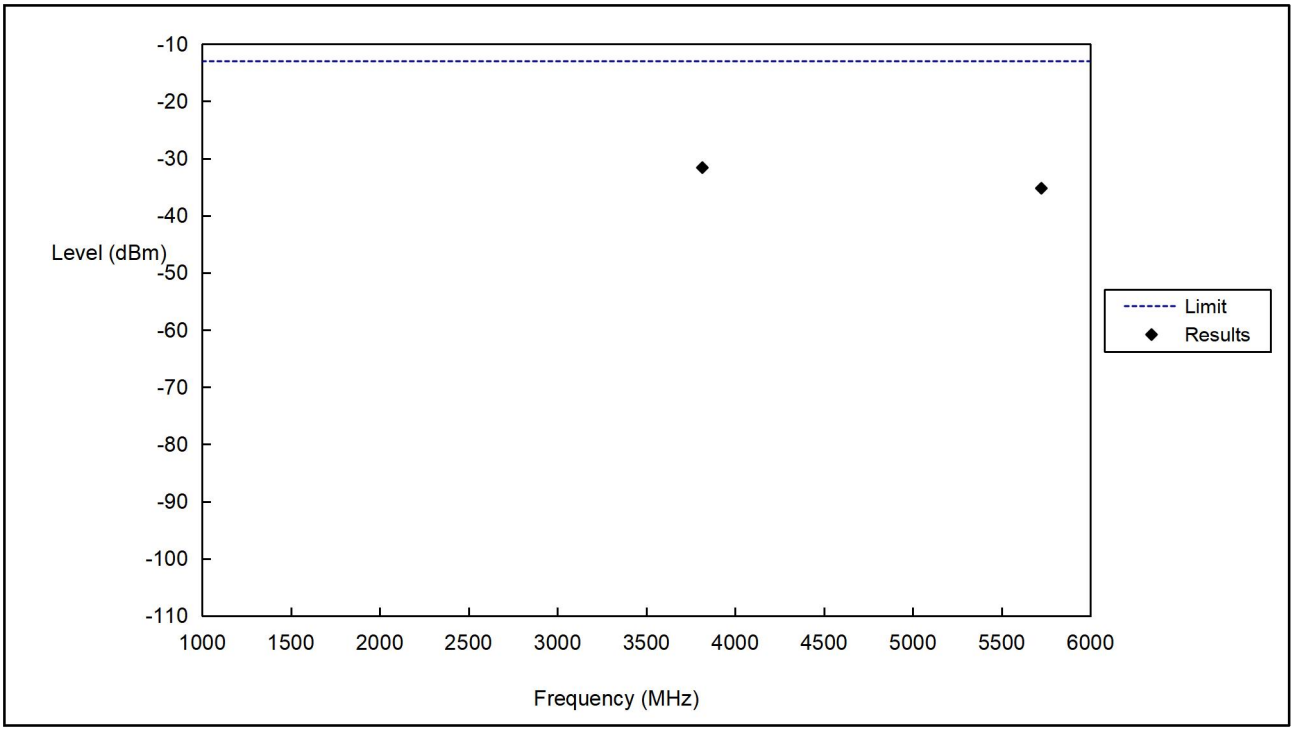
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3760.8	-32.47	-13	-19.47	RMS
2	5640.0	-33.37	-13	-20.37	RMS

Middle Channel (1880MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



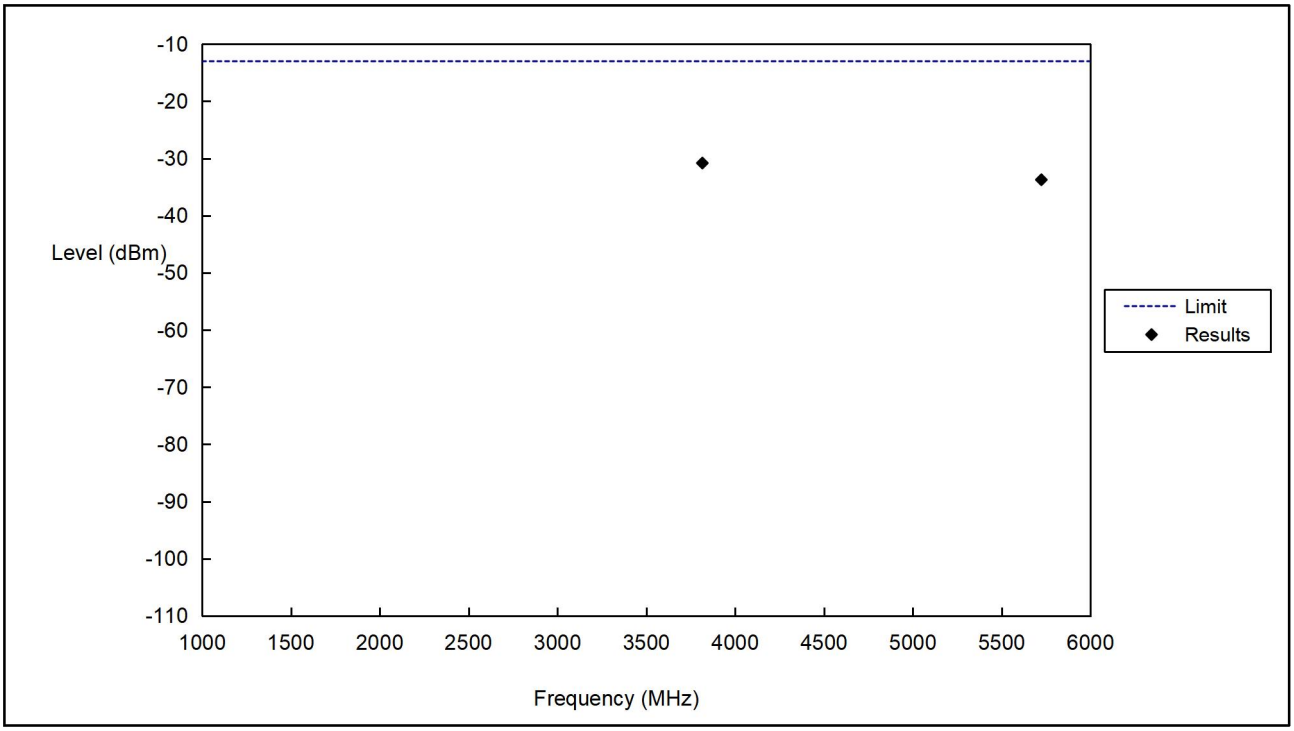
No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3760.8	-32.21	-13	-19.21	RMS
2	5640.0	-32.55	-13	-19.55	RMS

High Channel (1907.6MHz)			
Test mode:	Traffic Mode	Polarity:	Horizontal



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3815.2	-31.61	-13	-18.61	RMS
2	5722.8	-35.22	-13	-22.22	RMS

High Channel (1907.6MHz)			
Test mode:	Traffic Mode	Polarity:	Vertical



No.	Frequency	Result	Limit	Margin	Remark
	(MHz)	(dBm)	(dBm)	(dB)	
1	3815.2	-30.81	-13	-17.81	RMS
2	5722.8	-33.73	-13	-20.73	RMS

Note: Result=Reading+ Correct, Margin= Result- Limit

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, other than listed in the table above are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

8. Frequency Stability

8.1 Standard Applicable

According to §22.355, §24.235, §27.54 the limit is 2.5ppm.

8.2 Test Procedure

According to §2.1055, the following test procedure was performed.
The Frequency Stability is measured directly with a Frequency Domain Analyzer. Frequency Deviation in ppm is calculated from the measured peak to peak value.
The Carrier Frequency Stability over Power Supply Voltage and over Temperature is measured with a Frequency Domain Analyzer in histogram mode.

8.3 Summary of Test Results/Plots

Please refer to Appendix E

9. Modulation characteristics

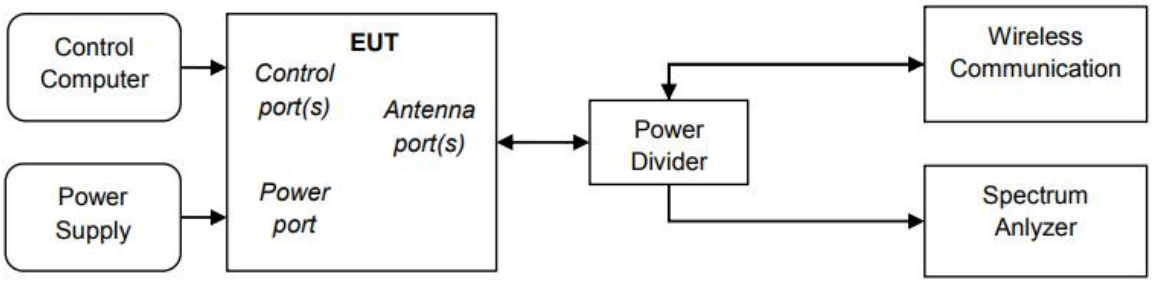
9.1 Standard Applicable

According to §2.1047, measurements required: Modulation characteristics is given below:

(a) Voice modulated communication equipment. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000Hz shall be submitted. For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter, or of all circuitry installed between the modulation limiter and the modulated stage shall be submitted.
(b) Equipment which employs modulation limiting. A curve or family of curves showing the percentage of modulation versus the modulation input voltage shall be supplied. The information submitted shall be sufficient to show modulation limiting capability throughout the range of modulating frequencies and input modulating signal levels employed.
(c) Single sideband and independent sideband radiotelephone transmitters which employ a device or circuit to limit peak envelope power. A curve showing the peak envelope power output versus the modulation input voltage shall be supplied. The modulating signals shall be the same in frequency as specified in paragraph (c) of §2.1049 for the occupied bandwidth tests.
(d) Other types of equipment. A curve or equivalent data which shows that the equipment will meet the modulation requirements of the rules under which the equipment is to be licensed.

9.2 Test Procedure

According to ANSI C63.26-2015 section 5.3.2, the following test setup was performed.



9.3 Summary of Test Results/Plots

Please refer to Appendix F

APPENDIX PHOTOGRAPHS

Please refer to “ANNEX”

******* END OF REPORT *******