



TEST REPORT

No. I20N02376-BLE

for

Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd

Feature phone

Model Name: CP3321AT

with

Hardware Version: P1

Software Version: 3321AT.201014.2S

FCC ID: R38YLCP3321AT

Issued Date: 2020-10-20

Note:

The test results in this test report relate only to the devices specified in this report. This report shall not be reproduced except in full without the written approval of SAICT.

Test Laboratory:

SAICT, Shenzhen Academy of Information and Communications Technology

Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China 518026.

Tel:+86(0)755-33322000, Fax:+86(0)755-33322001

Email: yewu@caict.ac.cn. www.saict.ac.cn





CONTENTS

C	ONTE	ENTS	2
1.	SU	MMARY OF TEST REPORT	3
	1.1.	TEST ITEMS	3
	1.2.	TEST STANDARDS	3
	1.3.	TEST RESULT	3
	1.4.	TESTING LOCATION	3
	1.5.	PROJECT DATA	3
	1.6.	SIGNATURE	3
2.	\mathbf{CL}	JENT INFORMATION	4
	2.1.	APPLICANT INFORMATION	
	2.2.	MANUFACTURER INFORMATION	4
3.	EQ	QUIPMENT UNDER TEST (EUT) AND ANCILLARY EQUIPMENT (AE)	5
	3.1.	ABOUT EUT	5
	3.2.	INTERNAL IDENTIFICATION OF EUT USED DURING THE TEST	5
	3.3.	INTERNAL IDENTIFICATION OF AE USED DURING THE TEST	5
	3.4.	GENERAL DESCRIPTION	6
4.	RE	FERENCE DOCUMENTS	7
	4.1.	DOCUMENTS SUPPLIED BY APPLICANT	7
	4.2.	REFERENCE DOCUMENTS FOR TESTING.	7
5.	TE	ST RESULTS	8
	5.1.	TESTING ENVIRONMENT	8
	5.2.	TEST RESULTS	8
	5.3.	STATEMENTS	8
6.	TE	ST EQUIPMENTS UTILIZED	9
7.	LA	BORATORY ENVIRONMENT1	0
8.	ME	EASUREMENT UNCERTAINTY1	1
Αľ	NNEX	X A: DETAILED TEST RESULTS 1	2
	A.0 A	NTENNA REQUIREMENT	2
	A.1 M	MAXIMUM PEAK OUTPUT POWER	3
	A.2 P	EAK POWER SPECTRAL DENSITY	6
	A.3 61	DB BANDWIDTH1	8
	A.4 B	AND EDGES COMPLIANCE	0
		RANSMITTER SPURIOUS EMISSION - CONDUCTED	
	A.6 T	RANSMITTER SPURIOUS EMISSION - RADIATED	8
	A.7 A	.C Power line Conducted Emission	5





1. Summary of Test Report

1.1. Test Items

Description Feature phone Model Name CP3321AT

Applicant's name Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd Manufacturer's Name Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd

1.2. Test Standards

FCC Part15-2019; ANSI C63.10-2013

1.3. Test Result

Pass

1.4. Testing Location

Address: Building G, Shenzhen International Innovation Center, No.1006 Shennan Road, Futian District, Shenzhen, Guangdong, P. R. China

1.5. Project data

Testing Start Date: 2020-09-16
Testing End Date: 2020-10-16

1.6. Signature

Lin Zechuang

(Prepared this test report)

Tang Weisheng

(Reviewed this test report)

Zhang Bojun

(Approved this test report)



Address:

Address:



2. Client Information

2.1. Applicant Information

Company Name: Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd

Building B, Boton Science Park, Chaguang Road, Xili Town, Nanshan

District, Shenzhen

Contact Person Yentl Chen

E-Mail chenyanting@yulong.com

Telephone: +86 15927320221

Fax:

2.2. Manufacturer Information

Company Name: Yulong Computer Telecommunication Scientific (Shenzhen) Co., Ltd

Building B, Boton Science Park, Chaguang Road, Xili Town, Nanshan

District, Shenzhen

Contact Person Yentl Chen

E-Mail chenyanting@yulong.com

Telephone: +86 15927320221

Fax: /





3. Equipment Under Test (EUT) and Ancillary Equipment (AE)

3.1. About EUT

Description Feature phone Model Name CP3321AT

Frequency Range 2400MHz~2483.5MHz

Type of Modulation GFSK Number of Channels 40

Antenna Type Integrated
Antenna Gain -0.6dBi

Power Supply 3.8V DC by Battery FCC ID R38YLCP3321AT

Condition of EUT as received No abnormality in appearance

Note: Components list, please refer to documents of the manufacturer; it is also included in the original test record of Shenzhen Academy of Information and Communications Technology.

3.2. Internal Identification of EUT used during the test

EUT ID*	IMEI	HW Version	SW Version	Receive Date
UT09aa	990016030008690	P1	3321AT.201014.2S	2020-09-16
UT03aa	990016030008328	P1	3321AT.201014.2S	2020-09-16

^{*}EUT ID: is used to identify the test sample in the lab internally.

3.3. Internal Identification of AE used during the test

AE ID*	Description	AE ID*
AE1	Battery	/
AE2	Travel Charger	/
AE3	Micro B Cable	/

AE1

Model Li-ion

Manufacturer Tianjin Lishen
Capacity 1500mAh
Nominal Voltage 3.8V

AE2

Model 618045

Manufacturer Shenzhen Kosun

AE3

Model USB A To Micro B Manufacturer Shenzhen BRL

^{*}AE ID: is used to identify the test sample in the lab internally.





3.4. General Description

The Equipment under Test (EUT) is a model of Feature phone with integrated antenna and battery. It consists of normal options: Lithium Battery, Charger and USB Cable.

Manual and specifications of the EUT were provided to fulfil the test.

Samples undergoing test were selected by the client.





4. Reference Documents

4.1. Documents supplied by applicant

EUT feature information is supplied by the applicant or manufacturer, which is the basis of testing.

4.2. Reference Documents for testing

The following documents listed in this section are referred for testing.

Reference	Title	Version	
FCC Part15	FCC CFR 47, Part 15, Subpart C:		
	15.205 Restricted bands of operation;		
	15.209 Radiated emission limits, general requirements; 2		
	15.247 Operation within the bands 902-928MHz,		
	2400-2483.5 MHz, and 5725-5850 MHz		
ANSI C63.10	American National Standard of Procedures for Compliance	2013	
	Testing of Unlicensed Wireless Devices		





5. Test Results

5.1. <u>Testing Environment</u>

Normal Temperature: $15\sim35^{\circ}C$ Relative Humidity: $20\sim75\%$

5.2. Test Results

No	Test cases	Sub-clause of Part 15C	Verdict
0	Antenna Requirement	15.203	Р
1	Maximum Peak Output Power	15.247 (b)	Р
2	Peak Power Spectral Density	15.247 (e)	Р
3	Occupied 6dB Bandwidth	15.247 (a)	Р
4	Band Edges Compliance	15.247 (d)	Р
5	Transmitter Spurious Emission - Conducted	15.247 (d)	Р
6	Transmitter Spurious Emission - Radiated	15.247, 15.205, 15.209	Р
7	AC Power line Conducted Emission	15.107, 15.207	Р

See ANNEX A for details.

5.3. Statements

SAICT has evaluated the test cases requested by the applicant/manufacturer as listed in section 5.2 of this report, for the EUT specified in section 3, according to the standards or reference documents listed in section 4.2.





6. Test Equipments Utilized

Conducted test system

No.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibratio n Period
1	Vector Signal Analyzer	FSV40	100903	Rohde & Schwarz	2021-01-15	1 year
2	Test Receiver	ESCI	100701	Rohde & Schwarz	2021-08-09	1 year
3	LISN	ENV216	102067	Rohde & Schwarz	2021-07-16	1 year

Radiated emission test system

	reducted emission test system						
NO.	Equipment	Model	Serial Number	Manufacturer	Calibration Due date	Calibration Period	
1	Loop Antenna	HLA6120	35779	TESEQ	2022-04-25	3 years	
2	BiLog Antenna	3142E	00224831	ETS-Lindgren	2021-05-17	3 years	
3	Horn Antenna	3117	00066577	ETS-Lindgren	2022-04-02	3 years	
4	Test Receiver	ESR7	101676	Rohde & Schwarz	2020-11-27	1 year	
5	Spectrum Analyser	FSV40	101192	Rohde & Schwarz	2021-01-14	1 year	
6	Chamber	FACT3-2.0	1285	ETS-Lindgren	2021-07-19	2 years	
7	Horn Antenna	QSH-SL-18- 26-S-20	17013	Q-par	2023-01-06	3 years	

Test software

No.	Equipment	Manufacturer	Version
1	TechMgr Software	CAICT	2.1.1
2	EMC32	Rohde & Schwarz	8.53.0
3	EMC32	Rohde & Schwarz	10.01.00

The path loss value of conduction test is automatically compensated by the test system.

EUT is engineering software provided by the customer to control the transmitting signal.

The EUT was programmed to be in continuously transmitting mode.

Anechoic chamber

Fully anechoic chamber by ETS-Lindgren





7. Laboratory Environment

Semi-anechoic chambe

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Normalised site attenuation (NSA)	< ±4 dB, 3 m distance, from 30 to 1000 MHz

Shielded room

Temperature	Min. = 15 °C, Max. = 35 °C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-1000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω

Fully-anechoic chamber

Temperature	Min. = 15 $^{\circ}$ C, Max. = 35 $^{\circ}$ C
Relative humidity	Min. = 20 %, Max. = 75 %
Shielding effectiveness	0.014MHz-1MHz> 60 dB; 1MHz-18000MHz>90 dB
Electrical insulation	> 2MΩ
Ground system resistance	< 4 Ω
Voltage Standing Wave Ratio (VSWR)	≤ 6 dB, from 1 to 18 GHz, 3 m distance
Uniformity of field strength	Between 0 and 6 dB, from 80 to 6000 MHz





8. Measurement Uncertainty

Test Name	Uncertain	ity (<i>k</i> =2)	
RF Output Power - Conducted	1.32dB		
2.Power Spectral Density - Conducted	2.32	dB	
3.Occupied channel bandwidth - Conducted	66H	łz	
	30MHz≶f≶1GHz	1.41dB	
	1GHz≶f≶7GHz	1.92dB	
4 Transmitter Spurious Emission - Conducted	7GHz≤f≤13GHz	2.31dB	
	13GHz≤f≤26GHz	2.61dB	
	9kHz≤f≤30MHz	1.70dB	
5 Transmitter Spurious Emission Redicted	30MHz≤f≤1GHz	4.90dB	
5. Transmitter Spurious Emission - Radiated	1GHz≤f≤18GHz	4.60dB	
	18GHz≤f≤40GHz	4.10dB	
6. AC Power line Conducted Emission	150kHz≤f≤30MHz	3.00dB	





ANNEX A: Detailed Test Results

A.0 Antenna requirement

Measurement Limit:

Standard	Requirement		
	An intentional radiator shall be designed to ensure that no antenna other than that		
	furnished by the responsible party shall be used with the device. The use of a		
	permanently attached antenna or of an antenna that uses a unique coupling to the		
	intentional radiator shall be considered sufficient to comply with the provisions of		
	this section. The manufacturer may design the unit so that a broken antenna can		
	be replaced by the user, but the use of a standard antenna jack or electrical		
FCC CRF Part	connector is prohibited. This requirement does not apply to carrier current devices		
15.203	or to devices operated under the provisions of §15.211, §15.213, §15.217,		
	§15.219, or §15.221. Further, this requirement does not apply to intentional		
	radiators that must be professionally installed, such as perimeter protection		
	systems and some field disturbance sensors, or to other intentional radiators		
	which, in accordance with §15.31(d), must be measured at the installation site.		
	However, the installer shall be responsible for ensuring that the proper antenna is		
	employed so that the limits in this part are not exceeded.		

Conclusion: The Directional gains of antenna used for transmitting is -0.6 dBi.

The RF transmitter uses an integrate antenna without connector.





A.1 Maximum Peak Output Power

Method of Measurement: See ANSI C63.10-clause 11.9.1.1

Use the following spectrum analyzer settings:

- a) Set the RBW = 3 MHz.
- b) Set VBW = 10 MHz.
- c) Set span = 10 MHz.
- d) Sweep time = auto couple.
- e) Detector = peak.
- f) Trace mode = max hold.
- g) Allow trace to fully stabilize.
- h) Use peak marker function to determine the peak amplitude level.

Measurement Limit:

Standard	Limit (dBm)
FCC 47 CRF Part 15.247(b)	< 30

Measurement Results:

Mode	Frequency (MHz)	RF output p	ower (dBm)	Conclusion
	2402(CH0)	Fig.1	-0.95	Р
GFSK	2440(CH19)	Fig.2	-0.56	Р
	2480(CH39)	Fig.3	-0.66	Р

See below for test graphs.

Conclusion: Pass



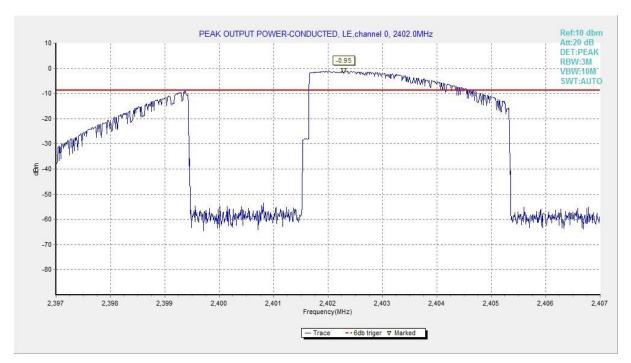


Fig.1 RF output power (Ch 0)

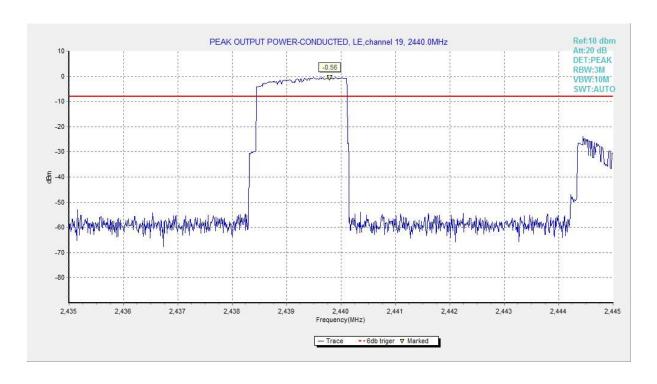


Fig.2 RF output power (Ch 19)





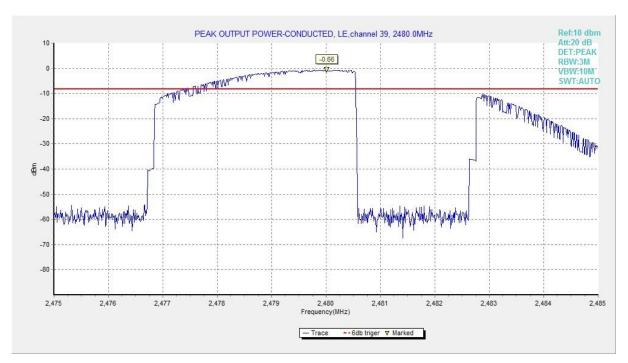


Fig.3 RF output power (Ch 39)





A.2 Peak Power Spectral Density

Method of Measurement: See ANSI C63.10-clause 11.10.2

Measurement Limit:

Standard	Limit
FCC 47 CRF Part 15.247(e)	< 8 dBm/3 kHz

Measurement Results:

Mode	Frequency (MHz)	Peak Powe	r Spectral Density (dBm)	Conclusion
	2402(CH0)	Fig.4	-16.55	Р
GFSK	2440(CH19)	Fig.5	-16.04	Р
	2480(CH39)	Fig.6	-16.13	Р

See below for test graphs.

Conclusion: PASS

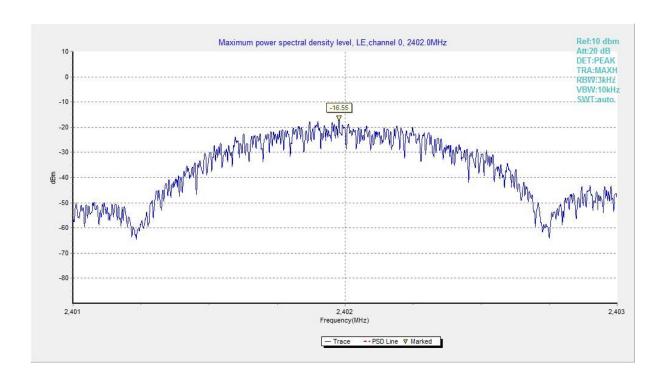


Fig.4 Power Spectral Density (Ch 0)



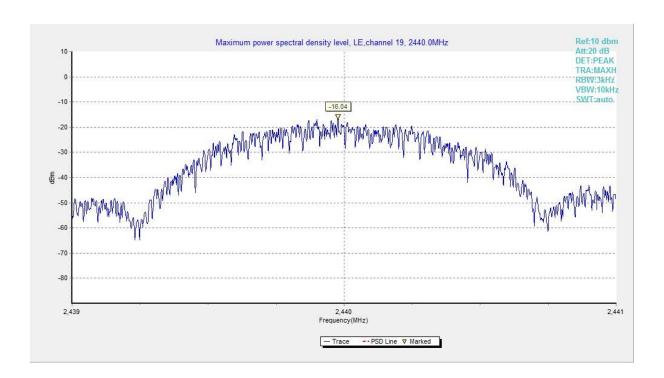


Fig.5 Power Spectral Density (Ch 19)

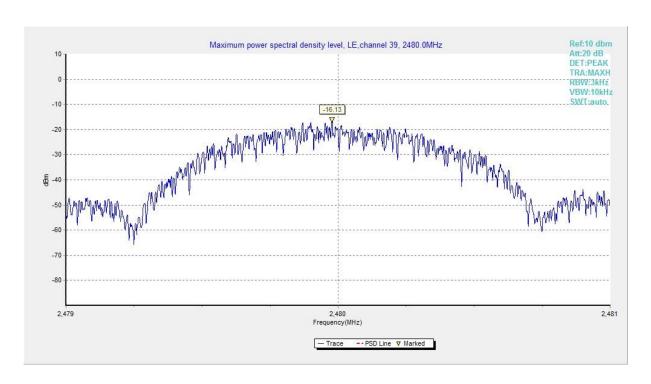


Fig.6 Power Spectral Density (Ch 39)





A.3 6dB Bandwidth

Measurement Limit:

Standard	Limit (kHz)
FCC 47 CFR Part 15.247 (a)	≥ 500

Measurement Result:

Mode	Frequency (MHz)	Test Results (kHz)		Conclusion
	2402(CH0)	Fig.7	690.00	Р
GFSK	2440(CH19)	Fig.8	711.50	Р
	2480(CH39)	Fig.9	713.00	P

See below for test graphs.

Conclusion: PASS

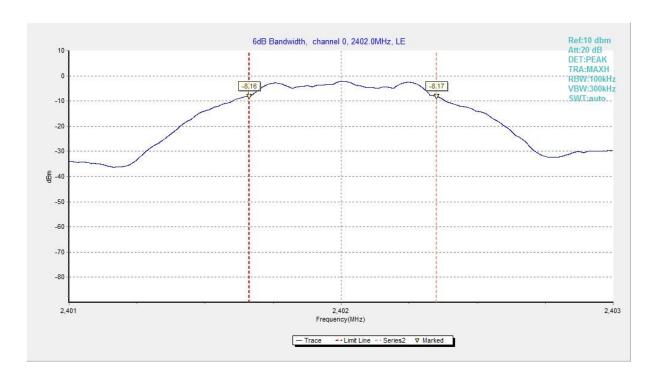


Fig.7 6dB Bandwidth (Ch 0)



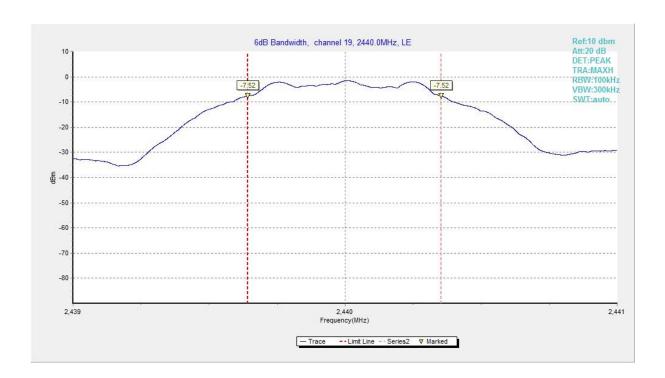


Fig.8 6dB Bandwidth (Ch 19)

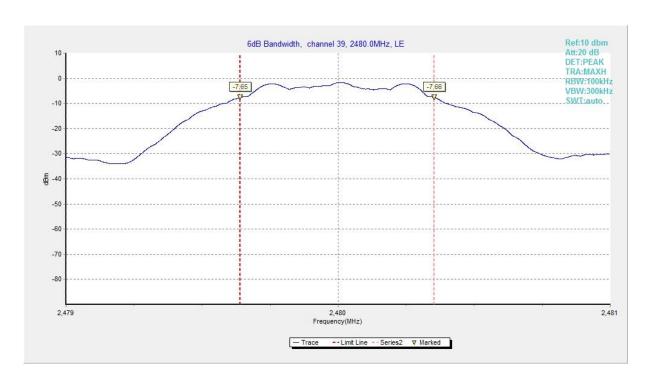


Fig.9 6dB Bandwidth (Ch 39)





A.4 Band Edges Compliance

Measurement Limit:

Standard	Limit (dBc)
FCC 47 CFR Part 15.247 (d)	>20

Measurement Result:

Mode	Frequency (MHz)	Test Results (dBc)		Conclusion
GFSK	2402(CH0)	Fig.10	58.76	Р
GFSK	2480(CH39)	Fig.11	61.55	Р

See below for test graphs.

Conclusion: PASS

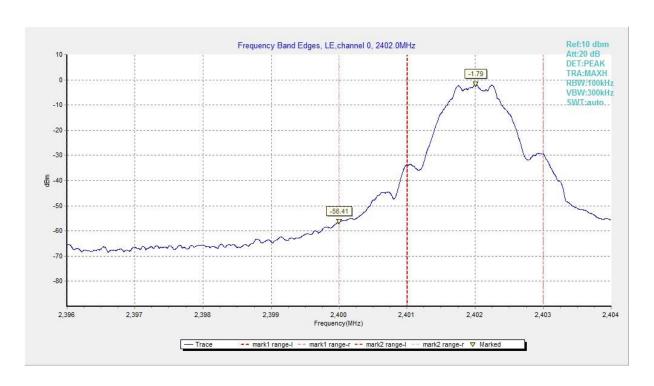


Fig.10 Band Edges (Ch 0)





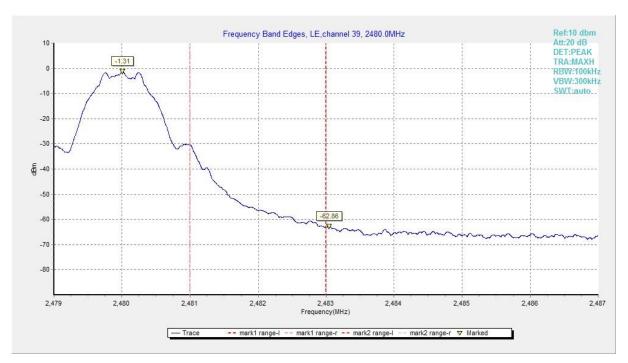


Fig.11 Band Edges (Ch 39)





A.5 Transmitter Spurious Emission - Conducted

Measurement Limit:

Standard	Limit	
FCC 47 CFR Part 15.247 (d)	20dB below peak output power in 100 kHz	
FOC 47 OFR Part 15.247 (u)	bandwidth	

Measurement Results:

MODE	Channel	Frequency Range	Test Results	Conclusion
		2.402 GHz	Fig.12	Р
	0	1GHz -3GHz	Fig.13	Р
		3GHz-10GHz	Fig.14	Р
		2.440 GHz	Fig.15	Р
	19	1GHz -3GHz	Fig.16	Р
GFSK		3GHz-10GHz	Fig.17	Р
		2.480 GHz	Fig.18	Р
	39	1GHz -3GHz	Fig.19	Р
		3GHz-10GHz	Fig.20	Р
	All channels	30MHz-1GHz	Fig.21	Р
	All Charlines	10GHz-26GHz	Fig.22	Р

See below for test graphs.

Conclusion: Pass

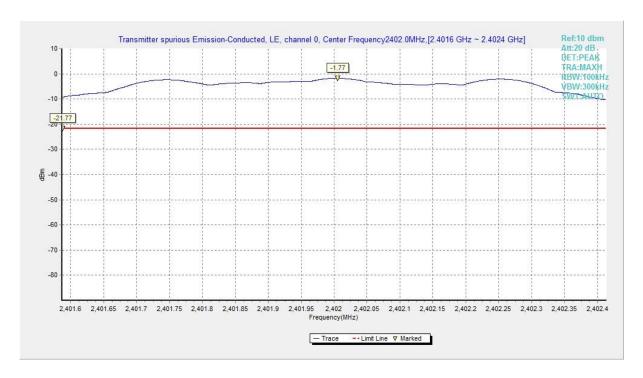


Fig.12 Conducted Spurious Emission (Ch0, Center Frequency)





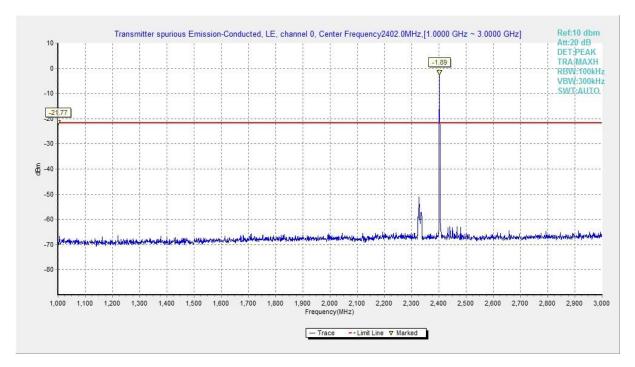


Fig.13 Conducted Spurious Emission (Ch0, 1 GHz-3 GHz)

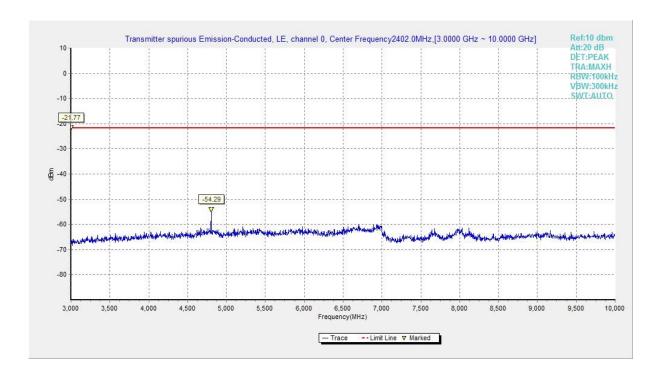


Fig.14 Conducted Spurious Emission (Ch0, 3 GHz-10 GHz)





Fig.15 Conducted Spurious Emission (Ch19, Center Frequency)

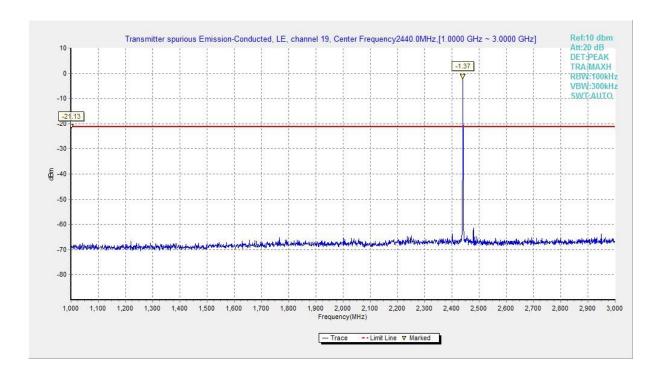


Fig.16 Conducted Spurious Emission (Ch19, 1 GHz-3 GHz)



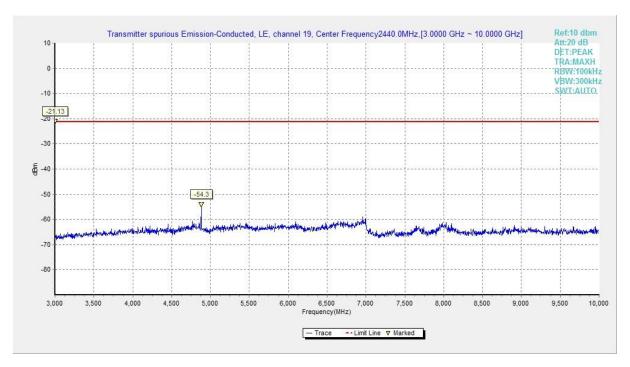


Fig.17 Conducted Spurious Emission (Ch19, 3 GHz-10 GHz)

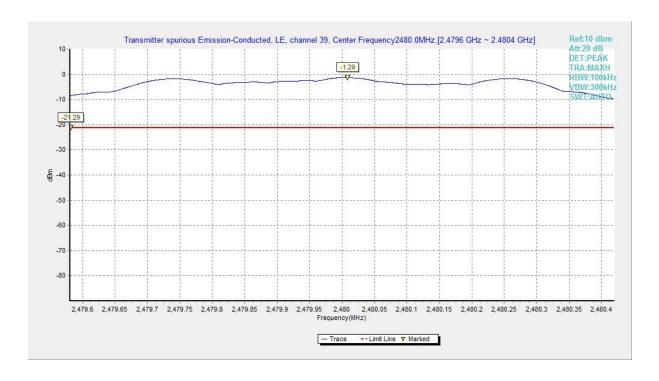


Fig.18 Conducted Spurious Emission (Ch39, Center Frequency)



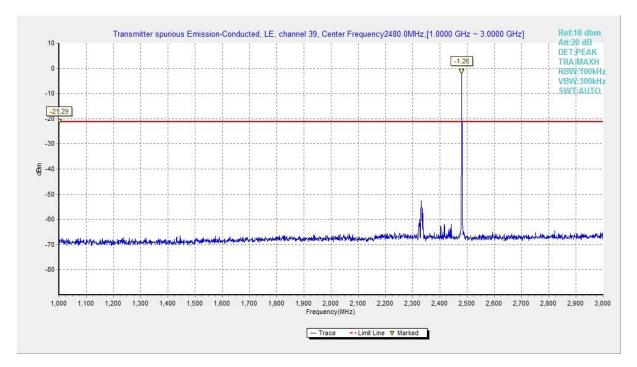


Fig.19 Conducted Spurious Emission (Ch39, 1 GHz-3 GHz)

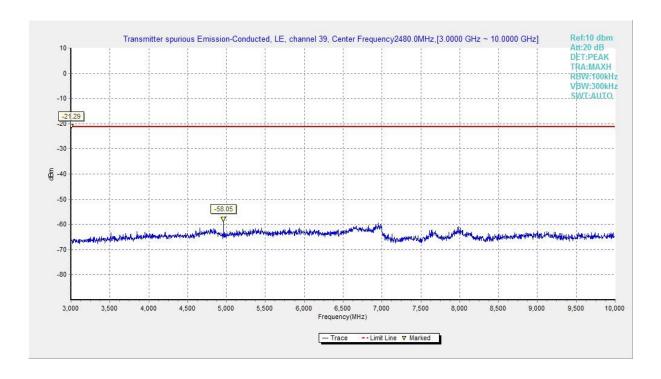


Fig.20 Conducted Spurious Emission (Ch39, 3 GHz-10 GHz)



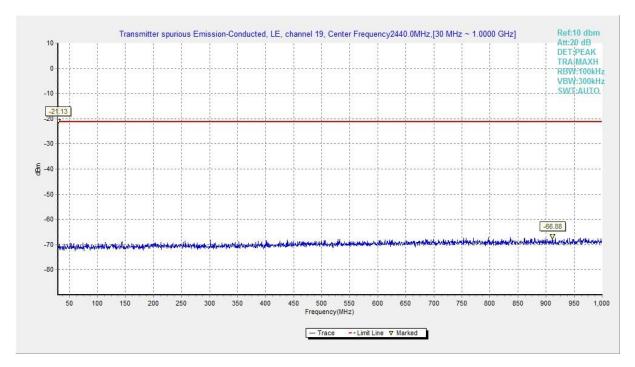


Fig.21 Conducted Spurious Emission (All channels, 30 MHz-1 GHz)

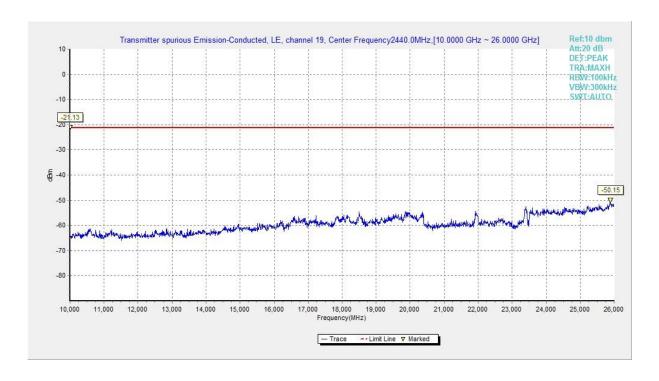


Fig.22 Conducted Spurious Emission (All channels, 10 GHz-26 GHz)





A.6 Transmitter Spurious Emission - Radiated

Measurement Limit:

Standard	Limit
FCC 47 CFR Part 15.247, 15.205, 15.209	20dB below peak output power

In addition, radiated emissions which fall in the restricted bands, as defined in § 15.205(a), must also comply with the radiated emission limits specified in § 15.209(a) (see § 15.205(c)).

Limit in restricted band:

Frequency of emission	Field atronath(u)//m)	Measurement
(MHz)	Field strength(μV/m)	distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Test Condition:

The EUT was placed on a non-conductive table. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

•	•	
Frequency of emission	RBW/VBW	Sweep Time(s)
(MHz)		
30-1000	120kHz/300kHz	5
1000-4000	1MHz/3MHz	15
4000-18000	1MHz/3MHz	40
18000-26500	1MHz/3MHz	20

Note: According to the performance evaluation, the radiated emission margin of EUT is over 20dB in the band from 9kHz to 30MHz. Therefore, the measurement starts from 30MHz to tenth harmonic. The measurement results include the horizontal polarization and vertical polarization measurements.



Measurement Results:

Mode	Channel	Frequency Range	Test Results	Conclusion
	0	1 GHz ~18 GHz	Fig.23	Р
	19	1 GHz ~18 GHz	Fig.24	Р
	39	1 GHz ~18 GHz	Fig.25	Р
CECK	Restricted Band(CH0)	2.38 GHz ~ 2.45 GHz	Fig.26	Р
GFSK -	Restricted Band(CH39)	2.45 GHz ~ 2.5 GHz	Fig.27	Р
		9 kHz ~30 MHz	Fig.28	Р
	All channels	30 MHz ~1 GHz	Fig.29	Р
		18 GHz ~ 26.5 GHz	Fig.30	Р

Worst Case Result GFSK CH0 (1-18GHz)

Frequency	MaxPeak	Limit	Margin	Pol	Corr.
(MHz)	(dBuV/m)	(dBµV/m)	(dB)	Poi	(dB/m)
12782.400000	47.76	74.00	26.24	V	8.5
14546.400000	47.63	74.00	26.37	Н	9.2
14942.800000	49.16	74.00	24.84	V	9.6
16138.800000	51.47	74.00	22.53	V	12.1
16538.000000	51.57	74.00	22.43	Н	13.5
17458.800000	52.81	74.00	21.19	Н	15.4

Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
13658.000000	34.19	54.00	19.81	V	7.8
14298.000000	34.82	54.00	19.18	V	9.2
14928.800000	36.27	54.00	17.73	V	9.5
15912.800000	37.64	54.00	16.36	V	11.1
16606.400000	40.24	54.00	13.76	V	13.9
17915.200000	40.47	54.00	13.53	V	15.8

GFSK CH19 (1-18GHz)

Frequency	MaxPeak	Limit	Margin	Pol	Corr.
(MHz)	(dBuV/m)	(dBµV/m)	(dB)	POI	(dB/m)
13217.600000	46.89	74.00	27.11	Н	8.2
14243.200000	46.75	74.00	27.25	V	8.7
14869.600000	49.36	74.00	24.64	V	9.5
15864.800000	50.48	74.00	23.52	V	10.5
16630.000000	52.59	74.00	21.41	Н	14.2
17639.600000	53.60	74.00	20.40	Н	15.9





Frequency (MHz)	Average (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Pol	Corr. (dB/m)
13256.400000	36.67	54.00	17.33	Н	8.3
14199.600000	36.53	54.00	17.47	V	8.4
14872.800000	38.44	54.00	15.56	V	9.5
15961.600000	39.24	54.00	14.76	V	11.2
16609.600000	41.79	54.00	12.21	Н	13.9
17640.000000	42.23	54.00	11.77	Н	15.9

GFSK CH39 (1-18GHz)

Frequency	MaxPeak	Limit	Margin	Del	Corr.
(MHz)	(dBuV/m)	(dBµV/m)	(dB)	Pol	(dB/m)
14178.400000	47.09	74.00	26.91	Н	8.3
14750.400000	48.09	74.00	25.91	V	9.4
15295.600000	48.42	74.00	25.58	Н	9.9
15873.600000	50.01	74.00	23.99	V	10.6
16554.000000	52.33	74.00	21.67	Н	13.5
17272.800000	51.99	74.00	22.01	V	15.0

Frequency	Average	Limit	Margin	Pol	Corr.
(MHz)	(dBµV/m)	(dBµV/m)	(dB)	POI	(dB/m)
14174.000000	37.10	54.00	16.90	V	8.2
14909.600000	38.49	54.00	15.51	V	9.7
15318.400000	38.56	54.00	15.44	V	10.0
15903.200000	39.11	54.00	14.89	V	10.9
16594.000000	41.84	54.00	12.16	V	13.7
17641.600000	42.40	54.00	11.60	V	15.9

Note:

A "reference path loss" is established and the A_{Rpl} is the attenuation of "reference path loss", and Antenna Factor, the gain of the preamplifier, the cable loss. P_{Mea} is the field strength recorded from the instrument.

The measurement results are obtained as described below:

Result= P_{Mea} +Cable Loss +Antenna Factor-Gain of the preamplifier.

See below for test graphs.

Conclusion: Pass



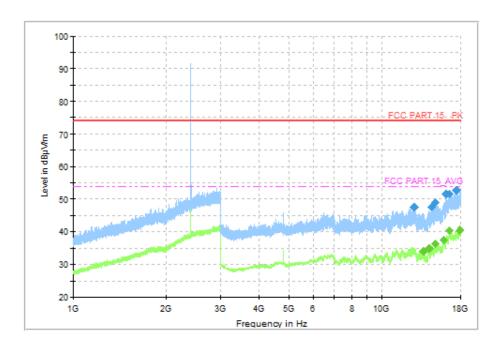


Fig.23 Radiated Spurious Emission (GFSK, Ch0, 1 GHz ~18 GHz)

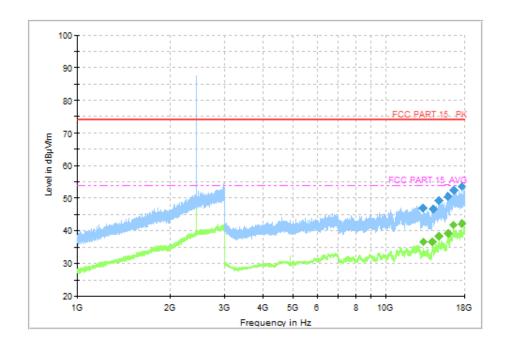


Fig.24 Radiated Spurious Emission (GFSK, Ch19, 1 GHz ~18 GHz)



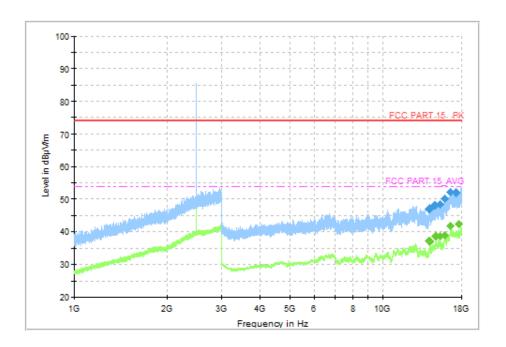


Fig.25 Radiated Spurious Emission (GFSK, Ch39, 1 GHz ~18 GHz)

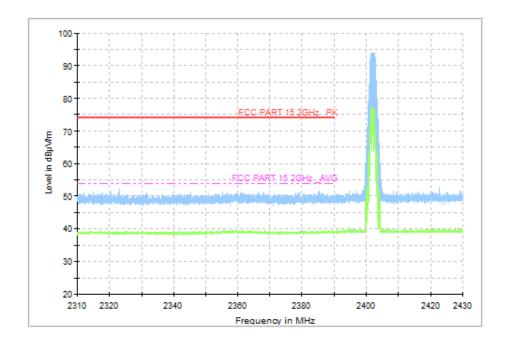


Fig.26 Radiated Band Edges (GFSK, Ch0, 2380GHz~2450GHz)



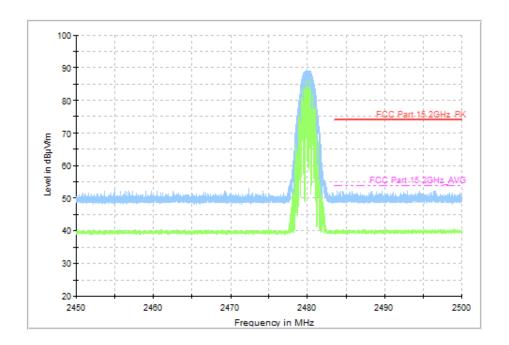


Fig.27 Radiated Band Edges (GFSK, Ch39, 2450GHz~2500GHz)

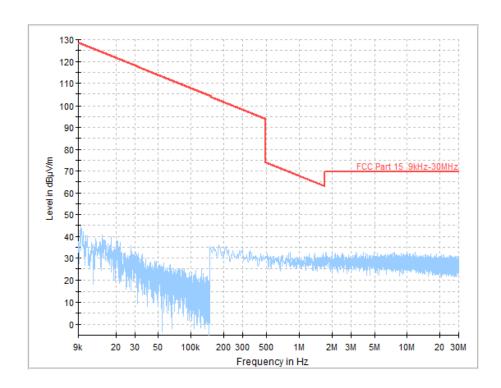


Fig.28 Radiated Spurious Emission (All Channels, 9 kHz-30 MHz)



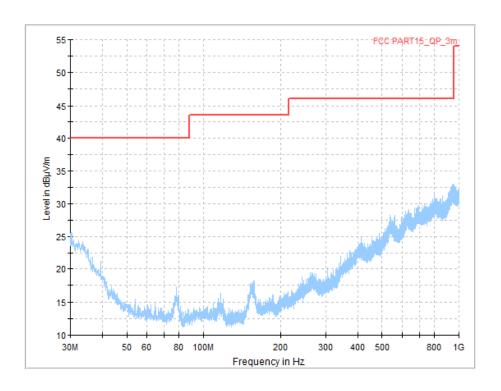


Fig.29 Radiated Spurious Emission (All Channels, 30 MHz-1 GHz)

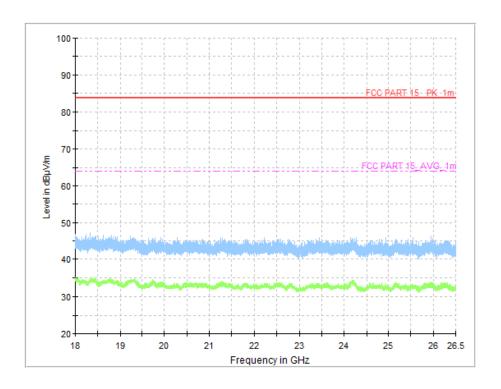


Fig.30 Radiated Spurious Emission (All Channels, 18 GHz-26.5 GHz)





A.7 AC Power line Conducted Emission

Test Condition:

Voltage (V)	Frequency (Hz)
120	60

Measurement Result and limit:

BLE (Quasi-peak Limit)

Frequency range	Quasi-peak	Result (dBμV)		Conclusion
(MHz)	Limit (dBμV)	Traffic	ldle	Conclusion
0.15 to 0.5	66 to 56			
0.5 to 5	56	Fig.31	Fig.32	Р
5 to 30	60			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

BLE (Average Limit)

Frequency range	Average-peak	Result (dBμV)		Conclusion
(MHz)	Limit (dBμV)	Traffic	ldle	Conclusion
0.15 to 0.5	56 to 46			
0.5 to 5	46	Fig.31	Fig.32	Р
5 to 30	50			

NOTE: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.5 MHz.

Note: The measurement results include the L1 and N measurements.

See below for test graphs.

Conclusion: Pass



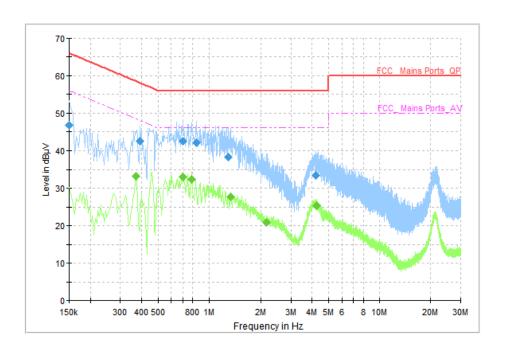


Fig.31 AC Power line Conducted Emission (Traffic)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	46.73	66.00	19.27	L1	ON	10
0.394000	42.42	57.98	15.55	L1	ON	10
0.702000	42.44	56.00	13.56	L1	ON	10
0.846000	41.98	56.00	14.02	L1	ON	10
1.298000	38.21	56.00	17.79	L1	ON	10
4.194000	33.55	56.00	22.45	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.370000	33.33	48.50	15.17	L1	ON	10
0.702000	33.15	46.00	12.85	L1	ON	10
0.794000	32.50	46.00	13.50	L1	ON	10
1.338000	27.66	46.00	18.34	L1	ON	10
2.150000	20.83	46.00	25.17	L1	ON	10
4.262000	25.50	46.00	20.50	L1	ON	10



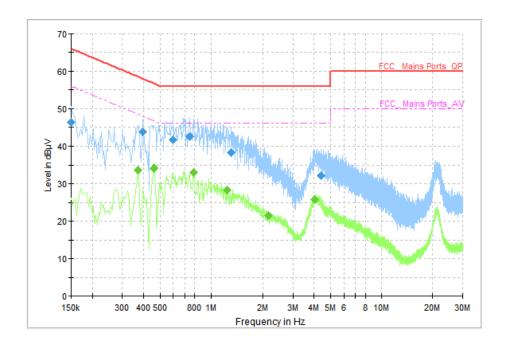


Fig.32 AC Power line Conducted Emission (Idle)

Measurement Results: Quasi Peak

Frequency (MHz)	Quasi Peak (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	46.24	66.00	19.76	N	ON	10
0.398000	43.70	57.90	14.19	L1	ON	10
0.598000	41.54	56.00	14.46	L1	ON	10
0.750000	42.56	56.00	13.44	L1	ON	10
1.318000	38.20	56.00	17.80	L1	ON	10
4.390000	32.29	56.00	23.71	L1	ON	10

Measurement Results: Average

Frequency (MHz)	Average (dBµV)	Limit (dBµV)	Margin (dB)	Line	Filter	Corr. (dB)
0.370000	33.68	48.50	14.82	L1	ON	10
0.462000	34.06	46.66	12.60	L1	ON	10
0.790000	33.16	46.00	12.84	L1	ON	10
1.250000	28.36	46.00	17.64	L1	ON	10
2.158000	21.52	46.00	24.48	L1	ON	10
4.034000	25.76	46.00	20.24	L1	ON	10

END OF REPORT