

TEST REPORT

FCC ULCA 48C Test for SM-F741U Certification

APPLICANT SAMSUNG Electronics Co., Ltd.

REPORT NO. HCT-RF-2404-FC039

DATE OF ISSUE April 26, 2024

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T E S T R E P O R T	REPORT NO. HCT-RF-2404-FC039 DATE OF ISSUE April 26, 2024 Additional Model SM-F741U1
Applicant	SAMSUNG Electronics Co., Ltd. 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea
Product Name Model Name	Mobile Phone SM-F741U
Date of Test	February 22, 2024 ~ April 23, 2024
FCC ID	A3LSMF741U
Location of Test	■ Permanent Testing Lab □ On Site Testing (Address: 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi- do, 17383 Republic of Korea)
FCC Classification:	Citizens Band End User Devices (CBE)
FCC Rule Part(s):	§ 96





REVISION HISTORY

The revision history for this test report is shown in table.

Revision No.	Date of Issue	Description
0	April 26, 2024	Initial Release

Notice

Content

The measurements shown in this report were made in accordance with the procedures specified in CFR47 section § 2.947. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them.

HCT CO., LTD. Certifies that no party to this application has subject to a denial of Federal benefits that includes FCC benefits pursuant to section 5301 of the Anti-Drug Abuse Act of 1998,21 U.S. C.853(a)

The results shown in this test report only apply to the sample(s), as received, provided by the applicant, unless otherwise stated.

The test results have only been applied with the test methods required by the standard(s).

When confirmation of authenticity of this test report is required, please contact www.hct.co.kr

The test results in this test report are not associated with the ((KS Q) ISO/IEC 17025) accreditation by KOLAS (Korea Laboratory Accreditation Scheme) / A2LA (American Association for Laboratory Accreditation) that are under the ILAC (International Laboratory Accreditation Cooperation) Mutual Recognition Agreement (MRA).



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MEASUREMENT REPORT

1. GENERAL INFORMATION

Applicant Name:	SAMSUNG Electronics Co., Ltd.	
Address:	129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Rep. of Korea	
FCC ID:	A3LSMF741U	
Application Type:	Certification	
FCC Classification:	Citizens Band End User Devices (CBE)	
FCC Rule Part(s):	§ 96	
EUT Type:	Mobile phone	
Model(s): SM-F741U		
Additional Model(s)	SM-F741U1	
Tx Frequency:	3553.3 - 3690.0: 5 MHz+20 MHz 3555.5 - 3690.0: 10 MHz+20 MHz 3557.8 - 3690.0: 15 MHz+20 MHz 3560.0 - 3696.7: 20 MHz+5 MHz 3560.0 - 3694.5: 20 MHz+10 MHz 3560.0 - 3692.2: 20 MHz+15 MHz 3560.0 - 3690.0: 20 MHz+20 MHz	
Date(s) of Tests:	February 22, 2024 ~ April 23, 2024	
Serial number:	Radiated : R3CX20KJT0F Conducted : 7b5599bdac507ece	
LTE CA:	CA 48C (Uplink)	



1.1. MAXIMUM OUTPUT POWER

Mode	T., F., a., a., a.		Emission	EI	RP
(PCC+SCC)	Tx Frequency (MHz)	Modulation	Designator	Max. Power (dBm)	Max. Power (W)
		QPSK	22M9G7D	19.91	0.098
		16QAM	22M8W7D	20.35	0.108
5 MHz+20 MHz	3553.3 - 3690.0	64QAM	22M7W7D	20.20	0.105
		256QAM	21M7W7D	17.32	0.054
		QPSK	27M6G7D	20.19	0.104
10 MU-100 MU-	3555.5 - 3690.0	16QAM	27M7W7D	20.76	0.119
10 MHz+20 MHz	3000.0	64QAM	27M6W7D	20.32	0.108
		256QAM	27M7W7D	17.29	0.054
		QPSK	32M6G7D	20.57	0.114
15 MHz+20 MHz	3557.8 - 3690.0	16QAM	32M7W7D	21.23	0.133
15 MHZ+20 MHZ		64QAM	32M8W7D	20.20	0.105
		256QAM	32M6W7D	17.32	0.054
	2500 0 2000 7	QPSK	22M7G7D	19.64	0.092
20 MHz+5 MHz		16QAM	22M9W7D	20.24	0.106
20 MHZ+3 MHZ	3560.0 - 3696.7	64QAM	22M7W7D	19.97	0.099
		256QAM	22M7W7D	17.24	0.053
		QPSK	27M8G7D	20.12	0.103
20 MHz+10 MHz	3560.0 - 3694.5	16QAM	27M7W7D	20.68	0.117
	5560.0 - 5694.5	64QAM	27M8W7D	20.21	0.105
		256QAM	27M7W7D	17.25	0.053
		QPSK	32M6G7D	20.75	0.119
20 MUL-115 MUL-		16QAM	32M5W7D	21.26	0.134
20 MHz+15 MHz	3560.0 - 3692.2	64QAM	32M6W7D	20.16	0.104
		256QAM	32M5W7D	17.22	0.053
		QPSK	37M3G7D	20.87	0.122
20 MU-120 MU-		16QAM	37M7W7D	21.29	0.135
20 MHz+20 MHz	3560.0 - 3690.0	64QAM	37M3W7D	20.23	0.105
		256QAM	37M5W7D	17.47	0.056





2. INTRODUCTION

2.1. DESCRIPTION OF EUT

The EUT was a Mobile Phone with GSM/GPRS/EGPRS/UMTS and LTE, Sub 6, mmWave. It also supports IEEE 802.11 a/b/g/n/ac/ax (20/40/80/160 MHz), Bluetooth(iPA, ePA), BT LE(iPA, ePA), NFC, WPT, WIFI 6E.

2.2. MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.3. TEST FACILITY

The Fully-anechoic chamber and conducted measurement facility used to collect the radiated data are located at the **74**, **Seoicheon-ro 578beon-gil**, **Majang-myeon**, **Icheon-si**, **Gyeonggi-do**, **17383**, **Rep. of KOREA**.





3. DESCRIPTION OF TESTS

3.1 TEST PROCEDURE

Test Description	Test Procedure Used
	- KDB 971168 D01 v03r01 – Section 4.3
Occupied Bandwidth	- ANSI C63.26-2015 – Section 5.4.4
	- KDB 940660 D01 v01
	- KDB 971168 D01 v03r01 – Section 6.0
Channel Edge/ ACLR	- ANSI C63.26-2015 – Section 5.7
	- KDB 940660 D01 v01
Spurious and Harmonic Emissions at	- KDB 971168 D01 v03r01 – Section 6.0
Antenna Terminal	- ANSI C63.26-2015 – Section 5.7
	- KDB 940660 D01 v01
	- KDB 971168 D01 v03r01 - Section 5.2.4
Conducted Output Power	- ANSI C63.26-2015 - Section 5.2.1 & 5.2.4.2
	- KDB 971168 D01 v03r01 – Section 5.7
Peak- to- Average Ratio	- ANSI C63.26-2015 – Section 5.2.3.4
	- KDB 940660 D01 v01
	- ANSI C63.26-2015 – Section 5.6
Frequency stability	- KDB 940660 D01 v01
Effective Radiated Power/	- KDB 971168 D01 v03r01 – Section 5.2 & 5.8
Effective Isotropic Radiated Power	- ANSI/TIA-603-E-2016 – Section 2.2.17
	- KDB 940660 D01 v01
Radiated Spurious and Harmonic	- KDB 971168 D01 v03r01 – Section 6.2
Emissions	- ANSI/TIA-603-E-2016 – Section 2.2.12
	- KDB 940660 D01 v01



3.2 RADIATED POWER

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

The equipment under test is placed on a non-conductive table 3-meters away from the receive antenna in accordance with ANSI/TIA-603-E-2016 Clause 2.2.17.

Test Settings

- 1. Radiated power measurements are performed using the signal analyzer's "channel power" measurement capability for signals with continuous operation.
- 2. RBW = 1 -5% of the expected OBW, not to exceed 1 MHz
- 3. VBW \geq 3 x RBW
- 4. Span = 1.5 times the OBW
- 5. No. of sweep points > 2 x span / RBW
- 6. Detector = RMS

7. Trigger is set to "free run" for signals with continuous operation with the sweep times set to "auto".

8. The integration bandwidth was roughly set equal to the measured OBW of the signal for signals with continuous operation.

- 9. Trace mode = trace averaging (RMS) over 100 sweeps
- 10. The trace was allowed to stabilize

Test Note

- 1. The turntable is rotated through 360 degrees, and the receiving antenna scans in order to determine the level of the maximized emission.
- 2. A half wave dipole is then substituted in place of the EUT. For emissions above 1 GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

The power is calculated by the following formula;

 P_{d} (dBm) = Pg (dBm) - cable loss (dB) + antenna gain (dB)

Where: P_d is the dipole equivalent power and P_g is the generator output power into the substitution antenna.

3. The maximum value is calculated by adding the forward power to the calibrated source plus its appropriate gain value.

These steps are repeated with the receiving antenna in both vertical and horizontal polarization. the difference between the gain of the horn and an isotropic antenna are taken into consideration

- 4. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.
- 5. All measurements are performed as RMS average measurements while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.





3.3 RADIATED SPURIOUS EMISSIONS

Test Overview

Radiated tests are performed in the Fully-anechoic chamber.

Radiated Spurious Emission Measurements at 3 meters by Substitution Method according to ANSI/TIA-603-E-2016.

Test Settings

- 1. RBW = 100 kHz for emissions below 1 GHz and 1 MHz for emissions above 1 GHz
- 2. VBW \geq 3 x RBW
- 3. Span = 1.5 times the OBW
- 4. No. of sweep points > 2 x span / RBW
- 5. Detector = Peak
- 6. Trace mode = Max Hold
- 7. The trace was allowed to stabilize
- 8. Test channel : Low/ Middle/ High
- 9. Frequency range : We are performed all frequency to 10th harmonics from 9 kHz.

Test Note

- Measurements value show only up to 3 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.
- 2. The EUT was tested in three orthogonal planes(X, Y, Z) and in all possible test configurations and positioning.

The worst case emissions are reported with the EUT positioning, modulations, RB sizes and offsets, and channel bandwidth configurations shown in the test data

3. For spurious emissions above 1 GHz, a horn antenna is substituted in place of the EUT. The substitute antenna is driven by a signal generator and the previously recorded signal was duplicated.

The spurious emissions is calculated by the following formula;

Result (dBm) = Pg (dBm) - cable loss (dB) + antenna gain (dBi)

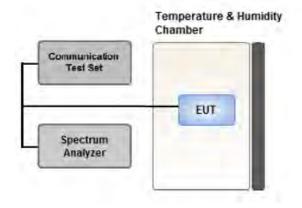
Where: P_{g} is the generator output power into the substitution antenna.

If the fundamental frequency is below 1 GHz, RF output power has been converted to EIRP.

EIRP (dBm) = ERP (dBm) + 2.15



3.4 PEAK- TO- AVERAGE RATIO



Test setup

① CCDF Procedure for PAPR

Test Settings

- 1. Set resolution/measurement bandwidth \geq signal's occupied bandwidth;
- 2. Set the number of counts to a value that stabilizes the measured CCDF curve;
- 3. Set the measurement interval as follows:
- .- for continuous transmissions, set to 1 ms,
- .- or burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
- 4. Record the maximum PAPR level associated with a probability of 0.1 %.

② Alternate Procedure for PAPR

Use one of the procedures presented in 5.2(ANSI C63.26-2015) to measure the total peak power and record as as P _{Pk}.

Use one of the applicable procedures presented 5.2(ANSI C63.26-2015) to measure the total average power and record as P $_{Avg}$. Determine the P.A.R. from:

P.A.R (dB) = P Pk (dBm) - P Avg (dBm) (P Avg = Average Power + Duty cycle Factor)



Test Settings(Peak Power)

The measurement instrument must have a RBW that is greater than or equal to the OBW of the signal to be measured and a VBW \geq 3 × RBW.

- 1. Set the RBW \geq OBW.
- 2. Set VBW \geq 3 × RBW.
- 3. Set span \geq 2 × OBW.
- 4. Sweep time \geq 10 × (number of points in sweep) × (transmission symbol period).
- 5. Detector = peak.
- 6. Trace mode = max hold.
- 7. Allow trace to fully stabilize.
- 8. Use the peak marker function to determine the peak amplitude level.

Test Settings(Average Power)

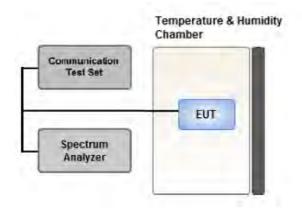
- 1. Set span to 2 × to 3 × the OBW.
- 2. Set RBW \geq OBW.
- 3. Set VBW \geq 3 × RBW.
- 4. Set number of measurement points in sweep \geq 2 × span / RBW.
- 5. Sweep time:
 - Set \geq [10 × (number of points in sweep) × (transmission period)] for single sweep

(automation-compatible) measurement. The transmission period is the (on + off) time.

- 6. Detector = power averaging (rms).
- 7. Set sweep trigger to "free run."
- 8. Trace average at least 100 traces in power averaging (rms) mode if sweep is set to auto-couple. (To accurately determine the average power over the on and off period of the transmitter, it can be necessary to increase the number of traces to be averaged above 100 or, if using a manually configured sweep time, increase the sweep time.)
- 9. Use the peak marker function to determine the maximum amplitude level.
- Add [10 log (1/duty cycle)] to the measured maximum power level to compute the average power during continuous transmission. For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is a constant 25 %.



3.5 OCCUPIED BANDWIDTH.



Test setup

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

The EUT makes a call to the communication simulator.

The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth

- 1. The signal analyzer's automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth and the 26 dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
- 2. RBW = 1 5% of the expected OBW
- 3. VBW \geq 3 x RBW
- 4. Detector = Peak
- 5. Trace mode = max hold
- 6. Sweep = auto couple
- 7. The trace was allowed to stabilize
- 8. If necessary, steps 2 7 were repeated after changing the RBW such that it would be within
 - 1 5 % of the 99 % occupied bandwidth observed in Step 7



Communication Test Set EUT Spectrum Analyzer

3.6 SPURIOUS AND HARMONIC EMISSIONS AT ANTENNA TERMINAL

Test setup

Test Overview

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic.

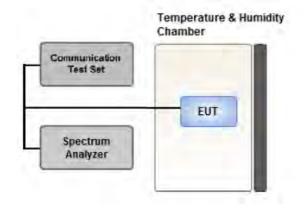
All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies.

All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

- 1. RBW = 1 MHz
- 2. VBW \geq 3 MHz
- 3. Detector = RMS
- 4. Trace Mode = trace average
- 5. Sweep time = auto
- 6. Number of points in sweep \geq 2 x Span / RBW



3.7 BAND EDGE



Test setup

Test Overview

All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

- 1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
- 2. Span was set large enough so as to capture all out of band emissions near the band edge
- 3. RBW > 1 % of the emission bandwidth
- 4. VBW > 3 x RBW
- 5. Detector = RMS
- 6. Number of sweep points \geq 2 x Span/RBW
- 7. Trace mode = trace average
- 8. Sweep time = auto couple
- 9. The trace was allowed to stabilize



Test Notes

According to FCC 22.917, 24.238, 27.53 specified that power of any emission 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.

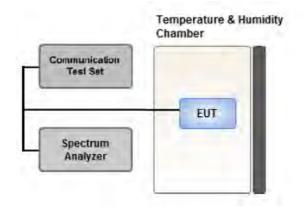
In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

All measurements were done at 2 channels(low and high operational frequency range.) The band edge measurement used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.

Where Margin < 1 dB the emission level is either corrected by 10 log(1 MHz/ RB) or the emission is integrated over a 1 MHz bandwidth to determine the final result. When using the integration method the integration window is either centered on the emission or, for emissions at the band edge, centered by an offset of 500 kHz from the block edge so that the integration window is the 1 MHz adjacent to the block edge.



3.8 FREQUENCY STABILITY / VARIATION OF AMBIENT TEMPERATURE



Test setup

Test Overview

Frequency stability testing is performed in accordance with the guidelines of ANSI C63.26-2015. The frequency stability of the transmitter is measured by:

1. Temperature:

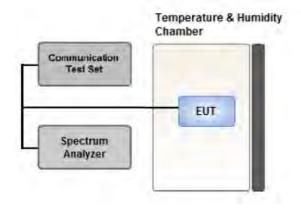
The temperature is varied from -30 °C to +50 °C in 10 °C increments using an environmental chamber.

- 2. Primary Supply Voltage:
 - .- Unless otherwise specified, vary primary supply voltage from 85 % to 115 % of the nominal value for other than hand carried battery equipment.
 - .- For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.

- 1. The carrier frequency of the transmitter is measured at room temperature (20 °C to provide a reference).
- 2. The equipment is turned on in a "standby" condition for fifteen minutes before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.
- 3. Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C. A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.



3.9 Adjacent Channel Leakage Ratio



Test setup

Test Settings

- 1. Use ACP measurement function of Spectrum analyzer to measure adjacent channel leakage ratio
- 2. Integ BW = Assigned channel bandwidth
- 5. Detector = RMS
- 6. Number of sweep points $\geq 2 \times \text{Span/RBW}$
- 7. Trace mode = trace average
- 8. Sweep time = 1 s
- 9. The trace was allowed to stabilize

Test Notes

the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.



4. LIST OF TEST EQUIPMENT

Equipment	Model	Manufacturer	Serial No.	Due to Calibration	Calibratior Interval
RF Switching System	FBSR-02B(1.2G HPF+LNA)	T&M SYSTEM	F1L1	12/11/2024	Annual
RF Switching System	FBSR-02B(3.3G HPF+LNA)	T&M SYSTEM	F1L2	12/11/2024	Annual
Power Splitter(DC ~ 26.5 GHz)	11667B	Hewlett Packard	5001	04/17/2025	Annual
DC Power Supply	E3632A	Agilent	MY40010147	06/23/2024	Annual
Dipole Antenna	UHAP	Schwarzbeck	557	03/09/2025	Biennial
Dipole Antenna	UHAP	Schwarzbeck	558	03/09/2025	Biennial
Chamber	SU-642	ESPEC	93008124	02/19/2025	Annual
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	147	08/17/2025	Biennial
Horn Antenna(1 ~ 18 GHz)	BBHA 9120D	Schwarzbeck	9120D-1298	09/11/2025	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170342	09/29/2024	Biennial
Horn Antenna(15 ~ 40 GHz)	BBHA 9170	Schwarzbeck	BBHA9170124	03/28/2025	Biennial
Signal Analyzer(10 Hz ~ 26.5 GHz)	N9020A	Agilent	MY52090906	04/19/2025	Annual
ATTENUATOR(20 dB)	8493C	Hewlett Packard	17280	04/17/2025	Annual
Spectrum Analyzer(10 Hz ~ 40 GHz)	FSV40	REOHDE & SCHWARZ	100931	08/17/2024	Annual
Base Station	8960 (E5515C)	Agilent	MY48360800	08/10/2024	Annual
Loop Antenna(9 kHz ~ 30 MHz)	FMZB1513	Schwarzbeck	1513-333	03/07/2026	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	895	09/16/2024	Biennial
Trilog Broadband Antenna	VULB9168	Schwarzbeck	1135	09/16/2024	Biennial
Wideband Radio Communication Tester	MT8821C	Anritsu Corp.	6262094331	11/17/2024	Annual
Wideband Radio Communication Tester	MT8820C	Anritsu Corp.	6201026545	12/11/2024	Annual
SIGNAL GENERATOR (100 kHz ~ 40 GHz)	SMB100A	REOHDE & SCHWARZ	177633	06/22/2024	Annual
Signal Analyzer(5 Hz ~ 40.0 GHz)	N9030B	KEYSIGHT	MY55480167	05/24/2024	Annual
FCC LTE Mobile Conducted RF Automation Test Software	-	HCT CO., LTD.,	-	-	-

Note:

1. Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

2. Especially, all antenna for measurement is calibrated in accordance with the requirements of C63.5 (Version : 2017).





5. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.4:2014.

All measurement uncertainty values are shown with a coverage factor of k = 2 to indicate a 95 % level of confidence. The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (±dB)
Conducted Disturbance (150 kHz ~ 30 MHz)	1.98 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (9 kHz ~ 30 MHz)	4.36 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (30 MHz ~ 1 GHz)	5.70 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (1 GHz ~ 18 GHz)	5.52 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (18 GHz ~ 40 GHz)	5.66 (Confidence level about 95 %, <i>k</i> =2)
Radiated Disturbance (Above 40 GHz)	5.58 (Confidence level about 95 %, <i>k</i> =2)



6. SUMMARY OF TEST RESULTS

6.1 Test Condition: Conducted Test

Test Description	FCC Part Section(s)	Test Limit	Test Result
Occupied Bandwidth	§ 2.1049	N/A	PASS
Band Edge / Spurious and Harmonic Emissions at Antenna Terminal.	§ 2.1051, § 96.41(e)	 -13 dBm/Mhz at frequencies within 0-10 MHz of channel edge -25 dBm/MHz at frequencies greater than 10 MHz above and below channel edge -40 dBm/MHz at frequencies below 3530 MHz and above 3720 MHz 	PASS
Adjacent Channel Leakage Ratio	§96.41(e)	At least 30 dB.	PASS
Conducted Output Power	§ 2.1046	N/A	PASS
Frequency stability / variation of ambient temperature	§ 2.1055,	Emission must remain in band	PASS

6.2 Test Condition: Radiated Test

Test Description	FCC Part Section(s)	Test Limit	Test Result	
Equivalent Isotropic Radiated Power	§ 96.41(b)	23 dBm/10 MHz	PASS	
Radiated Spurious and	§ 2.1053,	-40 dBm/MHz	PASS	
Harmonic Emissions	§ 96.41(e)		FA33	



7. SAMPLE CALCULATION

7.1 ERP Sample Calculation

Ch.	/ Freq.	Measured	Substitute Level (dBm)	Ant. Gain (dBd)				RP
channel	Freq.(MHz)	Level (dBm)			C.L	Pol.	w	dBm
128	824.20	-21.37	38.40	-10.61	0.95	Н	0.483	26.84

ERP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.

2) During the test, the turn table is rotated until the maximum signal is found.

3) Record the field strength meter's level.

- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
- 6) The signal generator output level with Ant. Gain and cable loss are the rating of effective radiated power.

7.2 EIRP Sample Calculation

Ch.	/ Freq.	Measured	Substitute Level (dBm)	Ant. Gain			EI	RP
channel	Freq.(MHz)	Level (dBm)		(dBi)	C.L	Pol.	w	dBm
20175	1,732.50	-15.75	18.45	9.90	1.76	Н	0.456	26.59

EIRP = Substitute LEVEL(dBm) + Ant. Gain – CL(Cable Loss)

1) The EUT mounted on a non-conductive turntable is 2.5 meter above test site ground level.

2) During the test, the turn table is rotated until the maximum signal is found.

- 3) Record the field strength meter's level.
- 4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
- 5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
- 6) The signal generator output level with Ant. Gain and cable loss are the rating of equivalent isotropic radiated power.



7.3. Emission Designator

GSM Emission Designator

Emission Designator = 249KGXW GSM BW = 249 kHz G = Phase Modulation X = Cases not otherwise covered W = Combination (Audio/Data)

EDGE Emission Designator

Emission Designator = 249KG7W GSM BW = 249 kHz G = Phase Modulation 7 = Quantized/Digital Info W = Combination (Audio/Data)

WCDMA Emission Designator

Emission Designator = 4M17F9W WCDMA BW = 4.17 MHz F = Frequency Modulation 9 = Composite Digital Info W = Combination (Audio/Data)

QPSK Modulation

Emission Designator = 4M48G7D LTE BW = 4.48 MHz G = Phase Modulation 7 = Quantized/Digital Info D = Data transmission; telemetry; telecommand

<u>QAM Modulation</u> Emission Designator = 4M48W7D LTE BW = 4.48 MHz W = Amplitude/Angle Modulated 7 = Quantized/Digital Info D = Data transmission; telemetry; telecommand





8. TEST DATA

Test Overview

The EUT is set up to transmit two contiguous LTE channels. The power level of both carriers and the various

conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The

spectrum is scanned from the lowest frequency generated in the equipment up to a frequency including its 10th harmonic. All out of band emissions are measured with a spectrum analyzer connected to the antenna terminal of the EUT while the EUT is operating at its maximum duty cycle, at maximum power, and at the appropriate frequencies. All data rates were investigated to determine the worst case configuration. All modes of operation were investigated and the worst case configuration results are reported in this section.

Test Note

- 1. All tests were evaluated for the two contiguous channels using various combinations of RB size, RB offset, modulation, and channel bandwidth.
- 2. Channel bandwidth is shown in the tables below based only on the channel bandwidths that were supported in this device.

Channel Bandwidth (PCC)	Channel Bandwidth (SCC)	Maximum aggregated bandwidth (MHz)
5	20	25
10	20	35
15	20	35
20	5	25
20	10	30
20	15	35
20	20	40



3. All modes of operation were investigated and the worst case configuration results are reported in this section.

Please refer to the table below.

- Worst case(Conducted Spurious Emissions, BandEdge)
- : We have selected higher of the Conduction Output Power.
- Worst case(Radiated Spurious Emissions) : We have selected higher of the EIRP.
- Worst case(OBW, PAR, Frequency stability)
- : All modes of operation were investigated and the worst case configuration results are reported.
- 4. All modes of operation were investigated and the worst case configuration results are reported.
 Mode : Stand alone, Stand alone + External accessories (Earphone, AC adapter, etc)
 Worst case : Stand alone
- 5. We were performed the RSE test in condition of co-location. Mode : Stand alone, Simultaneous transmission scenarios Worst case : Stand alone
- 6. All 3 channels(low/mid/high) of conducted power and radiated power were investigated and the worst case channel results are reported.
- 7. The EUT was tested in three modes(Open, Half-open, Closed), the worst case configuration results are reported.

Worst case: Closed mode.

Teet		Onersting			PCC					SCC			
Test Description	Mod	Operating frequency	BW (MHz)	Freq. (MHz)	Ch.	RB	RB Offset	BW (MHz)	Freq. (MHz)	Ch.	RB	RB Offset	
		Low	20	3560.0	55340	1	99	20	3579.8	55538	1	0	
		Mid	20	3615.1	55891	1	99	20	3634.9	56089	1	0	
		High	20	3670.2	56442	1	99	20	3690.0	56640	1	0	
Conducted		Low	20	3560.0	55340	1	0	20	3579.8	55538	1	99	
Spurious	16QAM -	Mid	20	3615.1	55891	1	0	20	3634.9	56089	1	99	
Emissions/ Band		High	20	3670.2	56442	1	0	20	3690.0	56640	1	99	
		Low	20	3560.0	55340	100	0	20	3579.8	55538	100	0	
Edge		Mid	5	3615.8	55898	25	0	20	3627.5	56015	100	0	
	-		High	20	3670.2	56442	100	0	20	3690.0	56640	100	0
		Mid	20	3615.1	55891	100	0	20	3634.9	56089	100	0	
Radiated		Low	20	3560.0	55340	1	99	20	3579.8	55538	1	0	
Spurious	16QAM	Mid	20	3615.1	55891	1	99	20	3634.9	56089	1	0	
Emissions		High	20	3670.2	56442	1	99	20	3690.0	56640	1	0	

[Worst case]



Test		Oneneting			PCC					SCC			
Test Description	Mod	Operating frequency	BW (MHz)	Freq. (MHz)	Ch.	RB	RB Offset	BW (MHz)	Freq. (MHz)	Ch.	RB	RB Offset	
			5	3615.8	55898	25	0	20	3627.5	56015	100	0	
	ODCK		10	3615.6	55896	50	0	20	3630.0	56040	100	0	
	QPSK,		15	3615.3	55893	75	0	20	3632.4	56064	100	0	
OBW, PAR	16QAM 64QAM 256QAM	Mid	20	3622.5	55965	100	0	5	3634.2	56082	25	0	
			20	3620.1	55941	100	0	10	3634.5	56085	50	0	
			20	3617.6	55916	100	0	15	3634.7	56087	75	0	
			20	3615.1	55891	100	0	20	3634.9	56089	100	0	
			5	3553.3	55273	25	0	20	3565.0	55390	100	0	
		Low	10	3555.5	55295	50	0	20	3569.9	55439	100	0	
		Low	15	3557.8	55318	75	0	20	3574.9	55489	50	0	
Frequency	16QAM		20	3560.0	55340	100	0	20	3579.8	55538	100	0	
stability	TOQAM		5	3678.3	56523	25	0	20	3690.0	56640	100	0	
,		High		10	3675.6	56496	50	0	20	3690.0	56640	100	0
			15	3672.9	56469	75	0	20	3690.0	56640	50	0	
			20	3670.2	56442	100	0	20	3690.0	56640	100	0	

[Worst case]



8.1 Conducted Power

			PCC					scc			Conducted.
Operating frequency	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Power [dBm]
	5	3553.3	55273	1	24	20	3565.0	55390	1	0	17.18
	10	3555.5	55295	1	49	20	3569.9	55439	1	0	16.55
	15	3557.8	55318	1	74	20	3574.9	55489	1	0	16.44
Low	20	3560.0	55340	1	99	5	3571.7	55457	1	0	17.63
	20	3560.0	55340	1	99	10	3574.4	55484	1	0	16.52
	20	3560.0	55340	1	99	15	3577.1	55511	1	0	16.50
	20	3560.0	55340	1	<i>99</i>	20	3579.8	55538	1	0	18.06
	5	3615.8	55898	1	24	20	3627.5	56015	1	0	21.47
	10	3615.6	55896	1	49	20	3630.0	56040	1	0	21.82
	15	3615.3	55893	1	74	20	3632.4	56064	1	0	22.27
Mid	20	3622.5	55965	1	99	5	3634.2	56082	1	0	21.38
	20	3620.1	55941	1	99	10	3634.5	56085	1	0	21.75
	20	3617.6	55916	1	99	15	3634.7	56087	1	0	22.28
	20	3615.1	<i>55891</i>	1	<i>99</i>	20	3634.9	56089	1	0	22.29
	5	3678.3	56523	1	24	20	3690.0	56640	1	0	17.88
	10	3675.6	56496	1	49	20	3690.0	56640	1	0	17.26
	15	3672.9	56469	1	74	20	3690.0	56640	1	0	17.12
High	20	3685.0	56590	1	99	5	3696.7	56707	1	0	18.17
	20	3680.1	56541	1	99	10	3694.5	56685	1	0	17.16
	20	3675.1	56491	1	99	15	3692.2	56662	1	0	17.13
	20	3670.2	56442	1	99	20	3690.0	56640	1	0	18.60

Note:

Modulation : QPSK(1RB)



.			PCC					SCC			Conducted.
Operating frequency	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Power [dBm]
	5	3553.3	55273	25	0	20	3565.0	55390	100	0	10.90
	10	3555.5	55295	50	0	20	3569.9	55439	100	0	11.95
	15	3557.8	55318	75	0	20	3574.9	55489	100	0	11.96
Low	20	3560.0	55340	100	0	5	3571.7	55457	25	0	10.93
	20	3560.0	55340	100	0	10	3574.4	55484	50	0	11.91
	20	3560.0	55340	100	0	15	3577.1	55511	75	0	11.95
	20	3560.0	55340	100	0	20	3579.8	<i>55538</i>	100	0	11.96
	5	3615.8	<i>55898</i>	25	0	20	3627.5	56015	100	0	19.53
	10	3615.6	55896	50	0	20	3630.0	56040	100	0	19.05
	15	3615.3	55893	75	0	20	3632.4	56064	100	0	19.01
Mid	20	3622.5	55965	100	0	5	3634.2	56082	25	0	19.51
	20	3620.1	55941	100	0	10	3634.5	56085	50	0	19.09
	20	3617.6	55916	100	0	15	3634.7	56087	75	0	18.74
	20	3615.1	55891	100	0	20	3634.9	56089	100	0	19.10
	5	3678.3	56523	25	0	20	3690.0	56640	100	0	11.70
	10	3675.6	56496	50	0	20	3690.0	56640	100	0	12.81
	15	3672.9	56469	75	0	20	3690.0	56640	100	0	12.78
High	20	3685.0	56590	100	0	5	3696.7	56707	25	0	11.68
	20	3680.1	56541	100	0	10	3694.5	56685	50	0	12.70
	20	3675.1	56491	100	0	15	3692.2	56662	75	0	12.73
	20	3670.2	56442	100	0	20	3690.0	56640	100	0	12.82

Note:

Modulation : QPSK(Full RB)



Onentin			PCC					Conducted.			
Operating frequency	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Power [dBm]
Low	20	3560.0	55340	1	99	20	3579.8	55538	1	0	18.82
Mid	20	3615.1	55891	1	99	20	3634.9	56089	1	0	22.95
High	20	3670.2	56442	1	99	20	3690.0	56640	1	0	19.31
Low	20	3560.0	55340	100	0	20	3579.8	55538	100	0	11.99
Mid	5	3615.8	55898	25	0	20	3627.5	56015	100	0	19.60
High	20	3670.2	56442	100	0	20	3690.0	56640	100	0	12.84

Note:

Modulation : 16QAM

Onenatina			PCC					Conducted.			
Operating frequency	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Power [dBm]
Low	20	3560.0	55340	1	99	20	3579.8	55538	1	0	18.70
Mid	20	3615.1	55891	1	99	20	3634.9	56089	1	0	21.97
High	20	3670.2	56442	1	99	20	3690.0	56640	1	0	19.18
Low	20	3560.0	55340	100	0	20	3579.8	55538	100	0	11.96
Mid	5	3615.8	55898	25	0	20	3627.5	56015	100	0	19.55
High	20	3670.2	56442	100	0	20	3690.0	56640	100	0	12.71

Note:

Modulation : 64QAM

On enstine			PCC					Conducted.			
Operating frequency	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Bandwidth [MHz]	Freq. (MHz)	Channel	RB	RB Offset	Power [dBm]
Low	20	3560.0	55340	1	99	20	3579.8	55538	1	0	18.17
Mid	20	3615.1	55891	1	99	20	3634.9	56089	1	0	18.94
High	20	3670.2	56442	1	99	20	3690.0	56640	1	0	18.66
Low	20	3560.0	55340	100	0	20	3579.8	55538	100	0	11.84
Mid	5	3615.8	55898	25	0	20	3627.5	56015	100	0	18.60
High	20	3670.2	56442	100	0	20	3690.0	56640	100	0	12.53

Note:

Modulation : 256QAM

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		PCC			SCC		Measured	Substitute	Ant.			E.I.	R.P
	BW	Channel.	RB/	BW	Channel	RB/	Level	Level	Gain	C.L	Pol.	147	-I Dava
	[MHz]	Channel	Offset	[MHz]	Channel	Offset	(dBm)	(dBm)	(dBi)			W	dBm
	5	55273	1/24	20	55390	1/0	-32.00	6.36	12.34	3.24	Н	0.035	15.46
	10	55295	1/49	20	55439	1/0	-32.40	5.96	12.34	3.24	Н	0.032	15.06
	15	55318	1/74	20	55489	1/0	-32.44	5.89	12.34	3.22	Н	0.032	15.01
Low	20	55340	1/99	5	55457	1/0	-31.26	7.07	12.34	3.22	Н	0.042	16.19
	20	55340	1/99	10	55484	1/0	-32.35	5.94	12.34	3.19	Н	0.032	15.09
	20	55340	1/99	15	55511	1/0	-32.30	5.99	12.34	3.19	Н	0.033	15.14
	20	55340	1/99	20	55538	1/0	-30.93	7.36	12.34	3.19	Н	0.045	16.51
	5	55898	1/24	20	56015	1/0	-27.81	10.80	12.32	3.21	Н	0.098	19.91
	10	55896	1/49	20	56040	1/0	-27.53	11.08	12.32	3.21	Н	0.104	20.19
	15	55893	1/74	20	56064	1/0	-27.09	11.47	12.32	3.22	Н	0.114	20.57
Mid	20	55965	1/99	5	56082	1/0	-27.97	10.55	12.31	3.22	Н	0.092	19.64
	20	55941	1/99	10	56085	1/0	-27.49	11.03	12.31	3.22	Н	0.103	20.12
	20	55916	1/99	15	56087	1/0	-26.91	11.65	12.32	3.22	Н	0.119	20.75
	20	55891	1/99	20	56089	1/0	-26.79	11.77	12.32	3.22	Н	0.122	20.87
	5	56523	1/24	20	56640	1/0	-31.65	7.35	12.29	3.16	Н	0.045	16.48
	10	56496	1/49	20	56640	1/0	-32.14	6.75	12.29	3.18	Н	0.039	15.86
	15	56469	1/74	20	56640	1/0	-32.29	6.60	12.29	3.18	Н	0.037	15.71
High	20	56590	1/99	5	56707	1/0	-31.23	7.88	12.29	3.13	Н	0.051	17.04
	20	56541	1/99	10	56685	1/0	-32.34	6.77	12.29	3.13	Н	0.039	15.93
	20	56491	1/99	15	56662	1/0	-32.38	6.62	12.29	3.16	Н	0.038	15.75
	20	56442	1/99	20	56640	1/0	-30.85	8.04	12.29	3.18	Н	0.052	17.15

8.2 Equivalent Isotropic Radiated Power

Note:

1. Modulation : QPSK

2. Limit : < 23 dBm





	PCC			SCC		Measured	Substitute	Ant.			E.I.	R.P
BW	Channel	RB/	BW	Channel	RB/	Level	Level	Gain	C.L	Pol.	14/	dDura
[MHz]	Channel	Offset	[MHz]	Channel	Offset	(dBm)	(dBm)	(dBi)			W	dBm
20	55340	1/99	20	55538	1/0	-30.20	8.09	12.34	3.19	Н	0.053	17.24
5	55898	1/24	20	56015	1/0	-27.37	11.24	12.32	3.21	Н	0.108	20.35
10	55896	1/49	20	56040	1/0	-26.96	11.65	12.32	3.21	Н	0.119	20.76
15	55893	1/74	20	56064	1/0	-26.43	12.13	12.32	3.22	Н	0.133	21.23
20	55965	1/99	5	56082	1/0	-27.37	11.15	12.31	3.22	Н	0.106	20.24
20	55941	1/99	10	56085	1/0	-26.93	11.59	12.31	3.22	Н	0.117	20.68
20	55916	1/99	15	56087	1/0	-26.40	12.16	12.32	3.22	Н	0.134	21.26
20	55891	1/99	20	56089	1/0	-26.37	12.19	12.32	3.22	Н	0.135	21.29
20	56442	1/99	20	56640	1/0	-30.13	8.76	12.29	3.18	Н	0.061	17.87

Note:

1. Modulation : 16QAM

2. Limit : < 23 dBm

	PCC			SCC		Measured	Substitute	Ant.			E.I.	R.P
BW	Channel.	RB/	BW		RB/	Level	Level	Gain	C.L	Pol.	147	
[MHz]	Channel	Offset	[MHz]	Channel	Offset	(dBm)	(dBm)	(dBi)			W	dBm
20	55340	1/99	20	55538	1/0	-30.38	7.91	12.34	3.19	Н	0.051	17.06
5	55898	1/24	20	56015	1/0	-27.52	11.09	12.32	3.21	Н	0.105	20.20
10	55896	1/49	20	56040	1/0	-27.40	11.21	12.32	3.21	Н	0.108	20.32
15	55893	1/74	20	56064	1/0	-27.46	11.10	12.32	3.22	Н	0.105	20.20
20	55965	1/99	5	56082	1/0	-27.64	10.88	12.31	3.22	Н	0.099	19.97
20	55941	1/99	10	56085	1/0	-27.40	11.12	12.31	3.22	Н	0.105	20.21
20	55916	1/99	15	56087	1/0	-27.50	11.06	12.32	3.22	Н	0.104	20.16
20	55891	1/99	20	56089	1/0	-27.43	11.13	12.32	3.22	Н	0.105	20.23
20	56442	1/99	20	56640	1/0	-30.30	8.59	12.29	3.18	Н	0.059	17.70

Note:

1. Modulation : 64QAM

2. Limit : < 23 dBm



	PCC			SCC		Measured	Substitute	Ant.			E.I.	R.P
BW	Channel	RB/	BW	Channel	RB/	Level	Level	Gain	C.L	Pol.	14/	مال
[MHz]	Channel	Offset	[MHz]	Channel	Offset	(dBm)	(dBm)	(dBi)			W	dBm
20	55340	1/99	20	55538	1/0	-30.59	7.70	12.34	3.19	Н	0.048	16.85
5	55898	1/24	20	56015	1/0	-30.40	8.21	12.32	3.21	Н	0.054	17.32
10	55896	1/49	20	56040	1/0	-30.43	8.18	12.32	3.21	Н	0.054	17.29
15	55893	1/74	20	56064	1/0	-30.34	8.22	12.32	3.22	Н	0.054	17.32
20	55965	1/99	5	56082	1/0	-30.37	8.15	12.31	3.22	н	0.053	17.24
20	55941	1/99	10	56085	1/0	-30.36	8.16	12.31	3.22	Н	0.053	17.25
20	55916	1/99	15	56087	1/0	-30.44	8.12	12.32	3.22	Н	0.053	17.22
20	55891	1/99	20	56089	1/0	-30.38	8.18	12.32	3.22	Н	0.053	17.28
20	56442	1/99	20	56640	1/0	-30.53	8.36	12.29	3.18	Н	0.056	17.47

Note:

1. Modulation : 256QAM

2. Limit : < 23 dBm



		Р	СС			S	сс		Measurement		Measurement	
Operating frequency	BW [MHz]	Ch.	Freq. (MHz)	RB/ Offset	BW [MHz]	Ch.	Freq. (MHz)	RB/ Offset	Maximum Frequency (GHz)	Factor (dB)		
Low	20	55340	3560.0	1/99	20	55538	3579.8	1/0	9.6874	28.591	-75.68	-47.09
Mid	20	55891	3615.1	1/99	20	56089	3634.9	1/0	5.1715	28.591	-76.16	-47.57
High	20	56442	3670.2	1/99	20	56640	3690.0	1/0	8.2543	28.591	-76.45	-47.86
Low	20	55340	3560.0	1/0	20	55538	3579.8	1/99	8.2926	28.591	-75.30	-46.71
Mid	20	55891	3615.1	1/0	20	56089	3634.9	1/99	8.2617	28.591	-76.10	-47.51
High	20	56442	3670.2	1/0	20	56640	3690.0	1/99	8.2971	28.591	-75.64	-47.04
Low	20	55340	3560.0	100/0	20	55538	3579.8	100/0	3.9891	27.976	-75.78	-47.80
Mid	5	55898	3615.8	25/0	20	56015	3627.5	100/0	4.3051	27.976	-75.74	-47.77
High	20	56442	3670.2	100/0	20	56640	3690.0	100/0	8.3086	28.591	-75.37	-46.78
Mid	20	55891	3615.1	100/0	20	56089	3634.9	100/0	9.6825	28.591	-76.57	-47.98

8.3 Conducted Spurious Emissions

Note:

1. Modulation : 16QAM

2. Factor(dB) = Cable Loss + Ext. Attenuator + Power Splitter

3. Factors for frequency :

Frequency Range (GHz)	Factor [dB]
0.03 - 1	25.270
1 - 5	27.976
5 - 10	28.591
10 - 15	29.116
15 - 20	29.489
Above 20(26.5)	30.131

4. Limit : -40.0 dBm





Frequency Range : 30 MHz ~ 10 GHz

Spectrum Anal Swept SA	yzer t	+				100	Frequency	1 22
	Input RF Compling DG Align Auto	Input Z: 50 Ω Corr CCorr Freq Ref. Int.(S) NFE Adaptive	Corr Preamp Off Gale Off Trig Free Run AWWWWW ef Int (S) IF Gain: Low AWWWWW				Center Frequency 5.015000000 GHz	Settings
1 Spectrum Scale/Div 10 c	1B T		Ref Level 6.00	dBm	Mk	r1 9.687 4 GHz -75.679 dBm	Span 9,97000000 GHz Swept Span Zero Span	
-4.00							Full Span	
34.0 -44.0 -54.0							Start Freq 30.000000 MHz	
-64.0						¢1	Stop Freq 10.000000000 GHz	
Start 30 MHz #Res BW 1.0 I			#Video BW 3.0	MHz	Sweep	Stop 10.000 GHz ~18.7 ms (20001 pts)	AUTO TUNE	
5 Marker Table	Ť					, , , , , , , , , , , , , , , , , , , ,	997.000000 MHz	
Mode 1 N 2 N 3 4 5 6	Trace Scale 1 f 1 f	x 9.687 4 GHz 3.568 9 GHz	Y -75.68 dBm -17.90 dBm	Function	Function Width	Function Value	Man Freq Offset 0 Hz X Axis Scale Log Lin	Local
15	2	? Apr 02, 2024 9:46:10 AM	9					

PCC 20 MHz Ch55340 RB1 Offset99 SCC 20 MHz Ch55538 RB1 Offset0



KEYSIGHT RL ++-	Align Auto Freq Re		2:50 Q #Atten 16 dB PNO Fast Corr Preamp Off Gate Off (eff Int (S) IF Gain: Low Adaptive Sig Track Off			ower (RMS123455 N www.www A A A A A A	Center Frequency 5.015000000 GHz Span		Settings
Spectrum cale/Div 10 c og	IB		Ref Level 6.00	dBm	Mk	r1 5.171 5 GHz -76.158 dBm	9.97000 Swe	000 GHz pt Span Span	
4.0			/				Fu	ll Span	
4.0							Start Free 30.0000	A second s	
54.0 54.0 74.0				1			Stop Free 10.0000	1 00000 GHz	
tart 30 MHz			#Video BW 3.0	MHz	أعفت	Stop 10.000 GHz	AUT	OTUNE	
Res BW 1.0 I Marker Table Mode	*	ale X	Y	Function	Sweep Function Width	~18.7 ms (20001 pts) Function Value	CF Step 997.000 Auto Man	6	
1 N 2 N 3	1	f 5.171 5 G f 3.624 2 G					Freq Offs 0 Hz	et	
4 5 6							X Axis So Log Lin	ale	Lo
5	3	P:48:24 AM	Ø						

PCC 20 MHz Ch55891 RB1 Offset99 SCC 20 MHz Ch56089 RB1 Offset0



YSIGHT Input. RF Coupling, BC Align: Auto			Input Z 50 0. #Atten 16 dB Corr CCorr Preamp Off Freq Ref. Int (S) NFE. Adaptive		PNO: Fast #Avg Type: Power (RMS 1 2 1 4 5 5 Gate: Off Trig: Free Run AWW WWW IF Gatin Low Sig Track. Off A A A A A A			Center Frequency 5.015000000 GHz		Settings
Spectrum ale/Div 10 d	в	•		Ref Level 6.00 c	1Bm	M	cr1 8.254 3 GHz -76.454 dBm	Swe	000 GHz pt Span o Span	
00 1.0			0	2					ull Span	
1.0								Start Fre 30.0000	9 100 MHz	
4.0 4.0 4.0							↓ 1	Stop Fre 10.0000	q 100000 GHz	
art 30 MHz				#Video BW 3.0	MHz		Stop 10.000 GHz	1000	TO TUNE	
es BW 1.0 M Marker Table Mode		Scale	X	Y	Function	Sweep Function Width		CF Step 997.000 Auto Man	000 MHz	
1 N 2 N 3	1	ľ	8.254 3 GHz 3.679 0 GHz					Freq Offs 0 Hz	set	
4 5 6								X Axis Se Log Lin		Lo

PCC 20 MHz Ch56442 RB1 Offset99 SCC 20 MHz Ch56640 RB1 Offset0



KEYSIGHT RL ++- M	Input. RF Coupling Align: Auto		Input Z: 50 Q Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten 16 dB Preamp Off	PNO Fast Gate Off IF Gain Low Sig Track Off	#Avg Type: F Trig: Free Ru	Power (RMS121455 In A WWWWW A A A A A A A	Center Fre 5.015000		Settings
Spectrum cale/Div 10 d	B			Ref Level 6.00	1Bm	M	kr1 8.292 6 GHz -75.301 dBm	0.070000	ot Span	
4.0			_∆2					Ful	Span	
14.0 14.0								Start Freq 30.00000	and the second se	
54.0 64.0 74.0							1	Stop Freq 10.00000	0000 GHz	
84.0 tart 30 MHz	-			#Video BW 3.0	MHz		Stop 10.000 GHz	AUTO	TUNE	
Res BW 1.0 M Marker Table Mode		Scale	x	Ŷ		Sweer Function Width	-18.7 ms (20001 pts) Function Value		00 MHz	
1 N 2 N 3	1	f	8.292 6 GHz 3.550 9 GHz					Freq Offse 0 Hz	et	
4 5 6								X Axis Sca Log Lin	ale	Lo
15	3	1	Apr 02, 2024 9:52:40 AM							

PCC 20 MHz Ch55340 RB1 Offset0 SCC 20 MHz Ch55538 RB1 Offset99



KEYSIGHT	Input. RE Coupling Align: Au	1 DC	Input Z: 50 Q Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten 16 dB Preamo Off	PNO Fast Gate Off IF Gain Low Sig Track Off	#Avg Type: P Trig: Free Rui	ower (RMS <mark>123455</mark> N www.www A A A A A A	Center Frequency 5.015000000 GHz Span	Setting
Spectrum cale/Div 10 d	B	•		Ref Level 6.00 d	1Bm	Mł	r1 8.261 7 GHz -76.101 dBm	9.97000000 GHz	
14.D								Full Span	
34.0 44,0								Start Freq 30.000000 MHz	
54.0 64.0 74.0							1	Stop Freq 10.000000000 GHz	
start 30 MHz				#Video BW 3.0	MHz		Stop 10.000 GHz	AUTO TUNE	
Res BW 1.0 M Marker Table Mode	1	• Scale	x	Ŷ	Function	Sweep Function Width	~18.7 ms (20001 pts) Function Value	CF Step 997.000000 MHz Auto Man	
1 N 2 N 3	1	t t	8.261 7 GHz 3.606 2 GHz					Freq Offset 0 Hz	
4 5 6								X Axis Scale Log Lin	L
5	3		Apr 02, 2024 9:54:45 AM	0				And the second s	

PCC 20 MHz Ch55891 RB1 Offset0 SCC 20 MHz Ch56089 RB1 Offset99



Mkr1 8.297 1 GHz 9.9700000 GHz Scale/Div 10 dB Ref Level 6.00 dBm -75.635 dBm Swept Span C00 2 2 2 3 Start Freq 340 2 2 1 Start Freq 30.000000 GHz 340 2 1 1 Start Freq 30.000000 GHz 340 3 1 1 1 Stop Freq 10.000 GHz 440 4 4 4 4 4 4 4 4 4 4 4 4 4 5 1 1 0.0000000 GHz 5 5 30.000000 GHz 5 30.0000000 GHz 5 5 5 5 5 5 5 5 5 5 5 5 5 5 6	EYSIGHT	Input. RF Coupling, DC Align, Auto	Input Z: 50 Q Corr CCorr Freq Ref. Int (S) NFE: Adaptive	#Atten 16 dB Preamp Off	PNO Fast Gate Off IF Gain, Low Sig Track, Off	#Avg Type: P Trig: Free Ru	ower (RMS <mark>123455</mark> n A www.ww.w A A A A A A	Center Freq 5.01500000 Span		ettings
Alo Pull Span Alo Start Freq Alo Image: Start Freq Marker Table Image: Start Freq Mode Trace Scale X Y Function Y Function Function Vidth Mode Trace Scale X Y Function Y Start Freq Marker Table Image: Start Freq Mode Trace Scale X Y Function Y Start Freq Start Freq Mode Trace Scale X Y Function Y Start Freq Start Freq Y Start Freq Start Freq Y Start Freq <t< td=""><td>ale/Div 10 d</td><td>e B</td><td></td><td>Ref Level 6.00</td><td>1Bm</td><td>M</td><td></td><td>9.97000000 Swept S</td><td>Span</td><td></td></t<>	ale/Div 10 d	e B		Ref Level 6.00	1Bm	M		9.97000000 Swept S	Span	
40 40 5			0	2				Full S	pan	
Mode Trace Scale X Y Function Function Width Function Vidth CF Stop 70.00000000 GHz Auto Auto Auto Auto Auto Auto Auto Auto Marker Table CF Step 997.0000000 GHz Auto Marker Table Auto Marker Table Auto Marker Table Auto Marker Table Auto Marker Marker Marker Table Auto Marker Marker Table Auto Marker <	0							the second s	MHz.	
Auto Tune art 30 MHz #Video BW 3.0 MHz Stop 10.000 GHz AUTO TUNE Les BW 1.0 MHz Sweep ~18.7 ms (20001 pts) CF Step 997.000000 MHz CF Step 997.000000 MHz Marker Table *	0				a dia sia dia manana				000 GHz	
Marker Table + 997.000000 MHz Mode Trace Scale X Y Function Function Value Auto 1 N 1 f 8.297 1 GHz -75.64 dBm Freq Offset Main 2 N 1 f 3.661 1 GHz -26.76 dBm Freq Offset 0 Hz	Manual Property lies			#Video BW 3.0	MHz		Stop 10.000 GHz	AUTO	TUNE	
2 N 1 f 3.661 1 GHz -26.76 dBm Freq Offset 3 0 Hz	/larker Table	÷			Function I			997.000000 Auto) MHz	
	2 N 3	1 F 1 F								_
4 5 6 Lin	5							Log		Lo

PCC 20 MHz Ch56442 RB1 Offset0 SCC 20 MHz Ch56640 RB1 Offset99



Spectrum Anal Swept SA		+					ø	Frequency	/ / 諾
KEYSIGHT RL	Align: Auto	Input Z: 50 Q Corr CCorr Freq Ref. Int (S) NFE: Adaptive	#Atten 16 dB Preamp Off	PNO Fast Gate Off IF Gain Low Sig Track Off	#Avg Type: Po Trig: Free Rur	A A A A A A A	5.0150	Frequency 00000 GHz	Settings
Spectrum Scale/Div 10 c	iB		Ref Level 6.00	dBm	Mk	r1 3.989 1 GHz -75.778 dBm	Sw	0000 GHz ept Span to Span	
14.D		^2					F	ull Span	
i4.0							Start Fr 30.000	eq 000 MHz	
4.0			1				Stop Fr 10.000	eq 000000 GHz	
art 30 MHz			#Video BW 3.0	MHz		Stop 10.000 GHz		TO TUNE	
Res BW 1.0 Marker Table Marker Mode	MHz Trace Scale		Y		Sweep Function Width	~18.7 ms (20001 pts) Function Value	CF Step	0000 MHz to	
1 N 2 N 3	1 r 1 r	3.989 1 GHz 3.556 4 GHz					Freq Of 0 Hz	lset	
4 5 6							X Axis S Lo Lin	9	Loca
5	C -	? Apr 02, 2024 9:59:37 AM	9						

PCC 20 MHz Ch55340 RB100 Offset0 SCC 20 MHz Ch55538 RB100 Offset0



KEYSIGHT RL ++-	Coupling Align Aut	00 g	nput Z: 50 Q Sorr CCorr Freq Ref. Int (S) NFE: Adaptive	#Atten 16 dB Preamp Off	PNO Fast Gate Off IF Gain Low Sig Track Off	#Avg Type: Po Trig: Free Rur	ower (RMS123455 A www.www. A A A A A A A		requency 0000 GHz	Settings
Spectrum cale/Div 10	dB			Ref Level 6.00 c	1Bm	Mk	r1 4.305 1 GHz -75.742 dBm	9.97000 Swe	000 GHz ept Span o Span	
14.D			\diamond^2					FL	ull Span	
34.0 44,0								Start Fre 30.0000	9 100 MHz:	
54.0 64.0 74.0				1				Stop Fre 10.0000	q 100000 GHz	
start 30 MHz				#Video BW 3.0	MHz		Stop 10.000 GHz	AUT	TO TUNE	
Res BW 1.0 5 Marker Table Mode	•	Scale	x	Ŷ		Sweep Function Width	~18.7 ms (20001 pts) Function Value	CF Step	000 MHz	
1 N 2 N 3	1	f	4.305 1 GHz 3.617 2 GHz					Freq Off 0 Hz	set	
4 5 6								X Axis S Log Lin		La
15	3	?	Apr 02, 2024 10:02:09 AM							

PCC 5MHz Ch55898 RB25 Offset0 SCC 20 MHz Ch56015 RB100 Offset0



	put. RF oupling .DC lign: Auto	Input Z: 50 Q Corr CCorr Freq Ref. Int (S) NFE: Adaptive	#Alten 16 dB Preamp Off	PNO Fast Gate Off IF Gain Low Sig Track Off	#Avg Type: P Trig: Free Ru	ower (RMS123455	Center Frequency 5.015000000 GHz Span	Settings
Spectrum ale/Div 10 dB	•		Ref Level 6.00 c	1Bm	M	r1 8.308 6 GHz -75.368 dBm	9.97000000 GHz Swept Span Zero Span	
4.0 4.0		A2	2				Full Span	
4.0		Y					Start Freq 30.000000 MHz	
4.0						1	Stop Freq 10.000000000 GHz	
art 30 MHz			#Video BW 3.0	MHz		Stop 10.000 GHz	AUTO TUNE	
es BW 1.0 MH: Marker Table	z T ace Scale	x	Ŷ		Sweep Function Width	~18.7 ms (20001 pts) Function Value	CF Step 997.000000 MHz Auto Man	
3	1 F 1 F	8.308 6 GHz 3.671 5 GHz					Freq Offset 0 Hz	
4 5 6							X Axis Scale Log Lin	Lo

PCC 20 MHz Ch56442 RB100 Offset0 SCC 20 MHz Ch56640 RB100 Offset0



Spectrum Analy Swept SA KEYSIGHT R L +++		Input Z: 50 Q Corr CCorr Freq Ref. Int (S) NFE: Adaptive	#Atten 16 dB Preamo Off	PNO Fast Gate Off IF Gain, Low Sig Track, Off	#Avg Type: Po Trig: Free Run	wer (RMS <mark>123455</mark> Awwwww AAAAAA		Frequency Frequency 00000 GHz	Settings
Spectrum icale/Div 10 d .0g	, IB	Hat Auguna	Ref Level 6.00		Mk	r1 9.682 5 GHz -76.569 dBm	Sw	0000 GHz ept Span to Span	
14.0		02					F	ull Span	
4.0							Start Fr 30.000	eq 000 MHz	
4.0							Stop Fr 10.000	eq 000000 GHz	
tart 30 MHz			#Video BW 3.0	MHz		Stop 10.000 GHz	200	TO TUNE	
Res BW 1.0 M Marker Table Mode	MHz Trace Scale	x	Y	Function F	Sweep	~18.7 ms (20001 pts) Function Value	the second second	0000 MHz to	
1 N 2 N 3	1 I 1 I	9.682 5 GHz 3.612 2 GHz					Freq Of 0 Hz	lset	
4 5 6							X Axis S Lo Lir	9	Loc
15	2	Apr 02, 2024 10:07:47 AM						-	

PCC 20 MHz Ch55891 RB100 Offset0 SCC 20 MHz Ch56089 RB100 Offset0



Frequency Range : 10 GHz ~ 37 GHz

	rr CCorr Preamp Off rq Ref Int (S) E Adaptive	PNO Fast Gate Off IF Gain High Sig Track Off	#Avg Type: Power (RM Tng: Free Run		Center Frequency 23.500000000 GHz	Settings
Spectrum v cale/Div 10 dB	Ref Level -20.0	00 dBm		839 5 GHz 7.002 dBm	27.0000000 Griz	
0.0					Full Span	
0.0					Start Freq 10.000000000 GHz	
					Stop Freq 37.000000000 GHz	
					AUTO TUNE	
	n a maggi manaka sa kanga juli ing malak manga kata Manga sa kanga sa kan	ana in statematica	ya na din da di mu di malambi m		CF Step 2.700000000 GHz Auto Man	
110					Freq Offset 0 Hz	
art 10.00 GHz Res BW 1.0 MHz	#Video BW 3.	0 MHz	Sweep ~50.6 n	top 37.00 GHz ns (54000 pts)		Loc

PCC 20 MHz Ch55340 RB1 Offset99, SCC 20 MHz Ch55538 RB1 Offset0



L Align Auto		Atten 0 dB reamp Off	PNO Fast Gate Off IF Gain, High Sig Track, Off	#Avg Type: Powe Trig: Free Run	(RMS <mark>123455) Awwwww AAAAAA</mark>	Center Frequency 23.50000000 GHz	Settings
Spectrum v cale/Div 10 dB	Re	f Level -20.00	dBm	Mkr1	36.324 5 GHz -77.006 dBm	Span 27.0000000 GHz Swept Span Zero Span	
0.0						Full Span	
						Start Freq 10.000000000 GHz	
50.0						Stop Freq 37.000000000 GHz	
					1	AUTO TUNE	
			and the second			CF Step 2.700000000 GHz Auto Man	
110						Freq Offset 0 Hz	
art 10.00 GHz Res BW 1.0 MHz	#	/ideo BW 3.0 I	MHz	Sween ~5	Stop 37.00 GHz 0.6 ms (54000 pts)	X Axis Scale Log Lin	Loc

PCC 20 MHz Ch55891 RB1 Offset99, SCC 20 MHz Ch56089 RB1 Offset0



Coupling DC Corr C Align Auto Freq R	Z 50 Q #Atten 0 dB Corr Preamp Off Ref: Int (S) Adaptive	PNO Fast Gate Off IF Gain, High Sig Track, Off		1 2 3 4 5 5 ^ \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Center Frequency 23.500000000 GHz	Settings
Spectrum • cale/Div 10 dB	Ref Level -20.0	0 dBm	Mkr1 36.1 -77.	28 0 GHz 190 dBm	Span 27.0000000 GHz Swept Span Zero Span	
0.0					Full Span	
0.0					Start Freq 10.00000000 GHz	
0.0					Stop Freq 37.000000000 GHz	
				↓ 1	AUTO TUNE	
0 0 0 0 <mark>1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1</mark>	a andress dependent destruction	in als as followed in a statistic sec.			CF Step 2.700000000 GHz Auto Man	
110					Freq Offset 0 Hz	-
art 10.00 GHz tes BW 1.0 MHz	#Video BW 3.	0 MHz	Sto Sweep ~50.6 ms	p 37.00 GHz	X Axis Scale Log Lin	Loc

PCC 20 MHz Ch56442 RB1 Offset99, SCC 20 MHz Ch56640 RB1 Offset0



Align Auto Fre	but Z: 50 Q #Atten 0 dB wr CCorr Preamp Off ag Ref. Int (S) Æ Adaptive	PNO: Fast #Avg Type: Power Gate: Off Trig: Free Run IF Gain: High Sig Track: Off		nter Frequency 3.500000000 GHz
pectrum v ale/Div 10 dB	Ref Level -20.			2.0000000 GHz Swept Span Zero Span
				Full Span
0			2217	art Freq 0.000000000 GHz
				op Freq 7.000000000 GHz
			1	AUTO TUNE
o o tereki kiring tereki kiring o	and the second		and the second second second	Step 700000000 GHz Auto Man
0 0			Fre	eq Offset Hz
rt 10.00 GHz es BW 1.0 MHz	#Video BW 3		Stop 37.00 GHz).6 ms (54000 pts)	Axis Scale

PCC 20 MHz Ch55340 RB1 Offset0, SCC 20 MHz Ch55538 RB1 Offset99



L ++ Coupling DC C Align Auto F	iput Z: 50 Ω #Atten 0 corr CCorr Preamp reg Ref: Int (S) IFE: Adaptive				Center Frequency 23.500000000 GHz	Settings
Spectrum	Ref Leve	-20.00 dBm	Mkr1 36.177 -76.71	0 GHz	Span 27.0000000 GHz Swept Span Zero Span	
0 0					Full Span	
0.0					Start Freq 10.000000000 GHz	
0.0					Stop Freq 37.000000000 GHz	
				- 1	AUTO TUNE	
9.0 9.0 upter storethety fundation fluteret	sana tulaski danskom	داران اولاً محمد من مربع المربع المراجع المربع المراجع المربع المربع المربع المربع المربع المربع المربع المراجع مربع مربع المربع الم	ati in a na hili na ma je a ku drih ta ka ma ni drih		CF Step 2.700000000 GHz Auto Man	
110					Freq Offset 0 Hz	
art 10.00 GHz tes BW 1.0 MHz	#Video I	3W 3.0 MHz	Stop 3 Sweep ~50.6 ms (54	7.00 GHz	X Axis Scale Log Lin	Loc

PCC 20 MHz Ch55891 RB1 Offset0, SCC 20 MHz Ch56089 RB1 Offset99



L + Align Auto Fr	put Z:50 Ω #Atten 0 dB orr CCorr Preamp Off req Ref. Int (S) FE: Adaptive	IF Gain, High	123455 Center Frequency Setting A A A A A A Span
Spectrum v cale/Div 10 dB	Ref Level -2	Mkr1 36.05 Bm -76.3	326 dBm Swept Span Zero Span
0.0			Full Span
0.0			Start Freq 10.00000000 GHz
0.0			Stop Freq 37.000000000 GHz
			1 AUTO TUNE
	and the second		CF Step 2.70000000 GHz Auto Man
110			Freq Offset 0 Hz
art 10.00 GHz Res BW 1.0 MHz	#Video BW	IHz Sto Sweep ∼50.6 ms	p 37.00 GHz (54000 pts)

PCC 20 MHz Ch56442 RB1 Offset0, SCC 20 MHz Ch56640 RB1 Offset99



L +- Coupling DC Align Auto		#Atten 0 dB Preamp Off	PNO: Fast Gate: Off IF Gain, High Sig Track: Off	#Avg Type: Power (R Trig: Free Run	MS123455 AWWWWW AAAAAA	Center Frequence 23.500000000 G	Setunds
Spectrum v cale/Div 10 dB	R	ef Level -20.00	dBm		.527 5 GHz 6.718 dBm	Span 27.0000000 GH; Swept Span Zero Span	
0.0						Full Span	
0.0						Start Freq 10.000000000 G	iHz.
0.0						Stop Freq 37.000000000 G	6Hz
						AUTO TUNE	
o o o o <mark>i ti harihitua pahirihi darah</mark>	in a line of the start of the second	ak a malan ining	An alta Antonia (alta	un den Millen delle serendet		CF Step 2.700000000 GF Auto Man	Ηz
110						Freq Offset 0 Hz	
art 10.00 GHz tes BW 1.0 MHz		Video BW 3.0	MHz		Stop 37.00 GHz ms (54000 pts)	X Axis Scale Log Lin	Loc

PCC 20 MHz Ch55340 RB100 Offset0, SCC 20 MHz Ch55538 RB100 Offset0



L +- Coupling DC Corr Align Auto Freq	t Z:50 Q #Atten 0 dB CCorr Preamp Off Ref. Int (S) Adaptive	PNO Fast Gate Off IF Gain, High Sig Track, Off			Center Frequency 23.500000000 GHz	Settings
Spectrum • cale/Div 10 dB	Ref Level -20.0	0 dBm	Mkr1 36.60 -76.8	5 5 GHz 94 dBm	Span 27.0000000 GHz Swept Span Zero Span	
0.0					Full Span	
0.0					Start Freq 10.000000000 GHz	
0.0					Stop Freq 37.000000000 GHz	
					AUTO TUNE	
o o o o <mark>11 ki bernosty er</mark> feldet Burgtlinge 100		n digi alawa na kita na kita na sa	ner (Arlan Ar (syn e a Harenner))		CF Step 2.700000000 GHz Auto Man	
110					Freq Offset 0 Hz	
art 10.00 GHz Res BW 1.0 MHz	#Video BW 3.0	0 MHz	Stop Sweep ~50.6 ms	o 37.00 GHz (54000 pts)	X Axis Scale Log Lin	Loc

PCC 5MHz Ch55898 RB25 Offset0, SCC 20 MHz Ch56015 RB100 Offset0



L + Coupling DC Corr Align Auto Free	t Z 50 Ω #Atten 0 dB r CCorr Preamp Off g Ref. Int (S) ≥ Adaptive	PNO:Fast #Avg Tyj Gate Off Trig:Fre IF Gain:Higt) Sig Track: Off	e Run A WWWWW A A A A A A	23.30000000 GH2	Settings
Spectrum • cale/Div 10 dB	Ref Level -20		Mkr1 36.409 5 GHz -76.855 dBm	21.000000000112	
				Full Span	
0.0				Start Freq 10.000000000 GHz	
0.0				Stop Freq 37.000000000 GHz	
				AUTO TUNE	
0.0 Initian Brankary Idealandia and a	un e mentralizzaria) alla com	A constant and a state of the s	A 1010 Day of American Street Constantial	CF Step 2.700000000 GHz Auto Man	
10				Freq Offset 0 Hz	-
art 10.00 GHz tes BW 1.0 MHz	#Video BW		Stop 37.00 GHz veep ~50.6 ms (54000 pts)		Loc

PCC 20 MHz Ch56442 RB100 Offset0, SCC 20 MHz Ch56640 RB100 Offset0



L Align Auto	Input Z: 50 Q Corr CCorr Freq Ref: Int (S) NFE: Adaptive	#Atten 0 dB Preamp Off	PNO Fast Gate Off IF Gain, High Sig Track, Off	Avg Type: Log-Powe Trig: Free Run	4 123455 AWWWWW AAAAAA	Center Frequency 23.500000000 GHz	Settings
Spectrum Cale/Div 10 dB	F	tef Level -20.00	dBm		5.930 5 GHz 76.959 dBm	Span 27.0000000 GHz Swept Span Zero Span	
						Full Span	
0.0						Start Freq 10.000000000 GHz	
5.0						Stop Freq 37.000000000 GHz	
					1 -	AUTO TUNE	
0.0 D.0 <mark>Territy (Sealthering the last subjects)</mark>	eductorius (2001)	and the second second	un palipretickiene dan	an a		CF Step 2.700000000 GHz	
00	New Statistics					Man	
10					_	Freq Offset 0 Hz	
art 10.00 GHz es BW 1.0 MHz		#Video BW 3.0	MHz	Sweep ~50.6	Stop 37.00 GHz ms (54000 pts)	X Axis Scale Log Lin	Loc

PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0

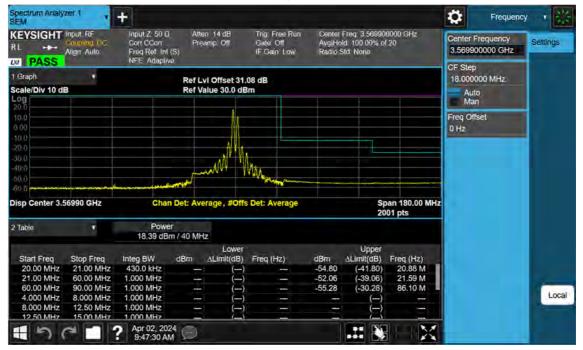


8.4 Channel Edge



PCC 20 MHz Ch55340 RB1 Offset99, SCC 20 MHz Ch55538 RB1 Offset0-1





PCC 20 MHz Ch55340 RB1 Offset99, SCC 20 MHz Ch55538 RB1 Offset0-2





PCC 20 MHz Ch55891 RB1 Offset99, SCC 20 MHz Ch56089 RB1 Offset0





PCC 20 MHz Ch56442 RB1 Offset99, SCC 20 MHz Ch56640 RB1 Offset0-1





PCC 20 MHz Ch56442 RB1 Offset99, SCC 20 MHz Ch56640 RB1 Offset0-2





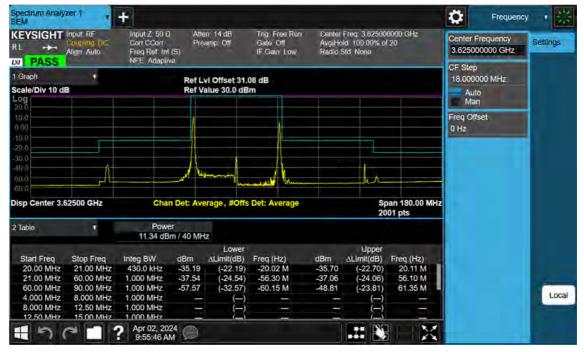
PCC 20 MHz Ch55340 RB1 Offset0, SCC 20 MHz Ch55538 RB1 Offset99-1



	Coupling DC Align: Auto	Input Z: 50 0 Gort CCorr Freq Ref. Int (S NFE_Adaptive			Trig. Free Run Gate Off IF Gain Low	AvgiHo	Freq: 3.56990 Id: 100.00% of Std: None		3.569	r Frequency 9900000 GHz	Settings
Graph cale/Div 10 dl	*		Ref Lvi C Ref Valu						and the second second	ep 00000 MHz Nuto	
20.0										lan	
10.0			Ń						Freq (0 Hz	Offset	
10.0											
30.0											
			11								
40:0											
40-0 50-0			1-		A						
50.0	ministerand		- Ju	-1.	- Alum						
50.0 60 D	6990 GHz	Chan	Det: Averag	ge, #Offs	للول Det: Average			an 180.00 MH 01 pts	z		
50 0 60 0 Disp Center 3.5	6990 GHz	Chan	Det: Averag	ge, #Offs	للبلاسي Det: Average				z		
50 0 60 0 Disp Center 3.5				ge , #Offs	للرار Det: Average				z		
60.0 60.0 Visp Center 3.5 ? Table		Power 5.89 dBm	/ 40 MHz	Lower			20 Upper	01 pts	z		
60 0 d0 0 Prisp Center 3.5 Prable Start Freq	Stop Freq	Power 5.89 dBm Integ BW	/ 40 MHz	Lower Limit(dB)	Det: Average	dBm	20 Upper ∆Limit(dB)	01 pts Freq (Hz)	z		
50 0 60 0 Disp Center 3.5 2 Table Start Freq 20.00 MHz	Stop Freq 21.00 MHz	Power 5.89 dBm Integ BW 430.0 kHz	dBrn ∆L	Lower Limit(dB) ()		-48.71	Upper ∆Limit(dB) (-35.71)	01 pts Freq (Hz) 20.03 M	z		
50 0 50 0 2 Table Start Freq 20.00 MHz 21.00 MHz	Stop Freq 21.00 MHz 60.00 MHz	Power 5,89 dBm Integ BW 430.0 kHz 1.000 MHz	/ 40 MHz dBm ΔL 	Lower imit(dB) () ()	Freq (Hz)	-48.71 -54.16	20 Upper ∆Limit(dB) (-35.71) (-41.16)	01 pts Freq (Hz) 20.03 M 21.98 M	z		
2 Table Start Freq 20.00 MHz 60.00 MHz	Stop Freq 21.00 MHz 60.00 MHz 90.00 MHz	Power 5,89 dBm Integ BW 430.0 kHz 1.000 MHz 1.000 MHz	dBm ΔL	Lower .imit(dB) () () ()	Freq (Hz) 	-48.71 -54.16 -55.45	20 Upper ∆Limit(dB) (-35.71) (-41.16) (-30.45)	01 pts Freq (Hz) 20.03 M 21.98 M 89.25 M	z		
50 0 50 0 2 Table Start Freq 20.00 MHz 21.00 MHz	Stop Freq 21.00 MHz 60.00 MHz	Power 5,89 dBm Integ BW 430.0 kHz 1.000 MHz	/ 40 MHz dBm ΔL 	Lower imit(dB) () ()	Freq (Hz)	-48.71 -54.16	20 Upper ∆Limit(dB) (-35.71) (-41.16)	01 pts Freq (Hz) 20.03 M 21.98 M	z		Lo

PCC 20 MHz Ch55340 RB1 Offset0, SCC 20 MHz Ch55538 RB1 Offset99-2





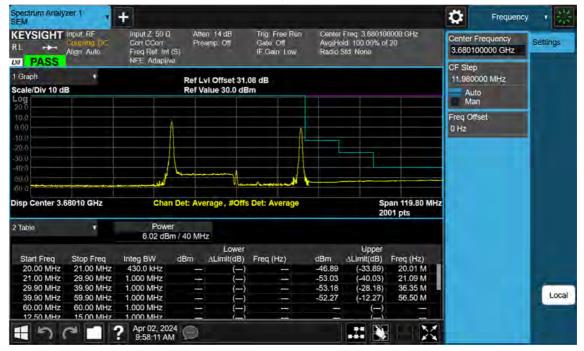
PCC 20 MHz Ch55891 RB1 Offset0, SCC 20 MHz Ch56089 RB1 Offset99



Concom Preamp On Gale On Avginoid 100.00% of 20	Center Frequency 3.680100000 GHz	Setting
CF Step Ref LvI Offset 31.08 dB Ref Value 30.0 dBm Auto	18.000000 MHz	
Man Freq Offs 0 Hz	Freq Offset	
Chan Det: Average , #Offs Det: Average Span 180.00 MHz 2001 pts	MHz	
	ИНZ	
2001 pts	ИНZ	
2001 pts Power 5.63 dBm / 40 MHz Lower Upper nteg BW dBm ALImit(dB) Freq (Hz) 430.0 kHz -41.75 (-28.75) -20.01 M — ()	MHZ	
2001 pts Power 5.63 dBm / 40 MHz Lower Upper nteg BW dBm ALimit(dB) Freq (Hz) dBm ALimit(dB) Freq (Hz)	MHZ	
2001 pts Power 5.63 dBm / 40 MHz Lower Upper I.ower Upper nteg BW dBm ALimit(dB) Freq (Hz) dBm ALimit(dB) Freq (Hz) 430.0 kHz -41.75 (-28.75) -20.01 M 1.000 MHz -48.03 (-35.03) -21.00 M ()		La

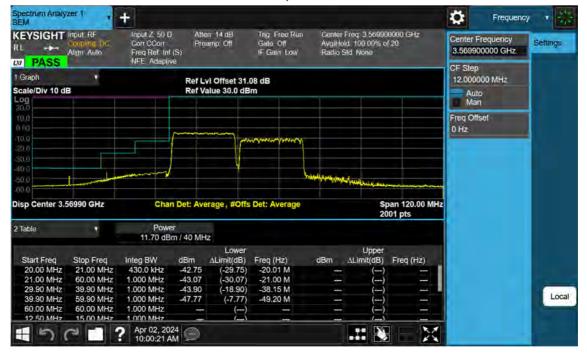
PCC 20 MHz Ch56442 RB1 Offset0, SCC 20 MHz Ch56640 RB1 Offset99-1





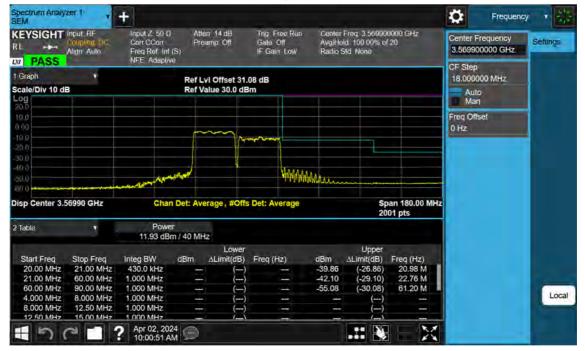
PCC 20 MHz Ch56442 RB1 Offset0, SCC 20 MHz Ch56640 RB1 Offset99-2





PCC 20 MHz Ch55340 RB100 Offset0, SCC 20 MHz Ch55538 RB100 Offset0-1





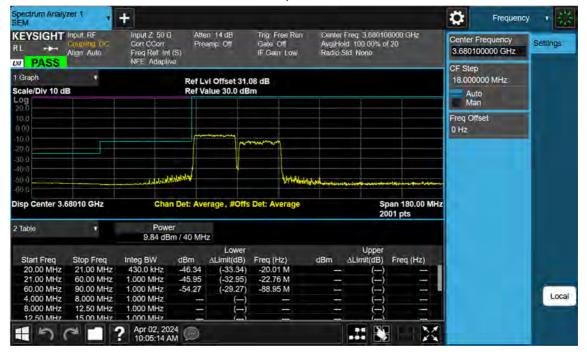
PCC 20 MHz Ch55340 RB100 Offset0, SCC 20 MHz Ch55538 RB100 Offset0-2





PCC 5MHz Ch55898 RB25 Offset0, SCC 20 MHz Ch56015 RB100 Offset0





PCC 20 MHz Ch56442 RB100 Offset0, SCC 20 MHz Ch56640 RB100 Offset0-1





PCC 20 MHz Ch56442 RB100 Offset0, SCC 20 MHz Ch56640 RB100 Offset0-2



Graph Ref Lvi Offset 31.08 dB cale/Div 10 dB Ref Value 30.0 dBm Ref Value 30.0 dBm Freq Offset 0 Hz Freq Offset 0 Hz Freq Offset 0 Hz Freq Offset 0 Hz	PASS	Input_RF Coupling DC Align Auto	Input Z 50 Q Gort CCorr Freq Ret Int (S) NFE Adaptive	Prea	n 14 dB mp: Off	Trig. Fr Gate C IF Gain	Dff	AvgiHo	Freq: 3,62500 Id: 100.00% of Std: None		3.6250	Frequency 00000 GHz	Settings
Org Org <th>Graph</th> <th></th> <th></th> <th>Ref Lv</th> <th>Offset 31</th> <th>.08 dB</th> <th></th> <th></th> <th></th> <th></th> <th>and the second s</th> <th></th> <th></th>	Graph			Ref Lv	Offset 31	.08 dB					and the second s		
10.0 10.0		в		Ref Va	lue 30.0 de	Bm					Aut	0	Ι.
10.0 10.0	-00										Ma	n	
Dood Down Down Down 10000 1000 1000 1											Freq Of	/set	
International state Power 18.85 dBm / 40 MHz Span 180.00 MHz 2001 pts Statt Freq Stop Freq Integ BW dBm ALimit(dB) Freq (Hz) dBm ALimit(dB) Freq (Hz) dBm ALimit(dB) Freq (Hz) 0.00 MHz 20.01 pts 0.00 MHz 20.00 MHz 1.000 MHz 4.000 MHz -()				man	pupping						1.000		
Start Freq Stop Freq Integ BW dBm ALimit(dB) Freq (Hz) dBm ALimit(dB) Freq (Hz) Data Call Lower Upper Start Freq Stop Freq Integ BW dBm ALimit(dB) Freq (Hz) dBm ALimit(dB) Freq (Hz) Call	10.0				10	Marila					4112	_	
Image: Start Freq Stop Freq Integ BW dBm ALimit(dB) Freq (Hz) dBm ALimit(dB) Freq (Hz) 21.00 MHz 21.00 MHz 430.0 MHz	20.0												
Bit Power Span 180.00 MHz Itsp Center 3.62500 GHz Chan Det: Average, #Offs Det: Average Span 180.00 MHz Power 2001 pts Itsp Center 3.62500 GHz Power 18.85 dBm / 40 MHz Lower Upper Start Freq Stop Freq Integ BW dBm ALimit(dB) Freq (Hz) dBm ALimit(dB) Freq (Hz) 20.00 MHz 21.00 MHz 430.0 kHz -35.56 (-22.56) -20.01 M -35.71 (-22.71) 20.18 M 21.00 MHz 60.00 MHz 1.000 MHz -34.86 (-21.36) -21.39 M -33.90 (-20.90) 22.56 M 60.00 MHz 8.000 MHz 1.000 MHz -49.73 (-24.73) -60.45 M -46.92 (-21.92) 61.50 M 8.000 MHz 1.000 MHz - () - () - () - () - () - () - () - () - () - () - () - ()	30.0						1.000						
Bit Power Span 180.00 MHz Itsp Center 3.62500 GHz Chan Det: Average , #Offs Det: Average Span 180.00 MHz Power 2001 pts Itsp Center 3.62500 GHz Power 18.85 dBm / 40 MHz Lower Upper Start Freq Stop Freq Integ BW dBm ALimit(dB) Freq (Hz) dBm ALimit(dB) Freq (Hz) 20.00 MHz 21.00 MHz 430.0 kHz -35.56 (-22.56) -20.01 M -35.71 (-22.71) 20.18 M 21.00 MHz 60.00 MHz 1.000 MHz -34.86 (-21.36) -21.39 M -33.90 (-20.90) 22.56 M 60.00 MHz 8.000 MHz 1.000 MHz -49.73 (-24.73) -60.45 M -46.92 (-21.92) 61.50 M 8.000 MHz 1.000 MHz - () - () - () - () - () - () - () - () - () - () - () - ()	40.0		and the second s	~y			Well-Market	hh.t.					
Sp Center 3.62500 GHz Chan Det: Average , #Offs Det: Average Span 180.00 MHz 2001 pts Table Power 18.85 dBm / 40 MHz Lower Upper Start Freq Stop Freq Integ BW dBm ALimit(dB) Freq (Hz) dBm ALimit(dB) Freq (Hz) 20.00 MHz 20.18 M 20.00 MHz 21.00 MHz 430.0 kHz -35.56 (-22.56) -20.01 M -35.71 (-22.71) 20.18 M 60.00 MHz 1.000 MHz -34.86 (-21.86) -21.39 M -33.90 (-20.90) 22.56 M -46.92 (-21.92) 61.50 M -45.90 MHz 1.000 MHz -1.000 MHz -(-) - () () () () () () () () () () () () () () () () () () () <t< td=""><td>50.0</td><td>and and a second second</td><td></td><td></td><td></td><td></td><td>till</td><td>THINK</td><td>Walthatild</td><td>and the second s</td><td></td><td></td><td></td></t<>	50.0	and and a second second					till	THINK	Walthatild	and the second s			
2001 pts 2001 pts Power 18.85 dBm / 40 MHz Lower Upper Start Freq Integ BW dBm ALimit(dB) Freq (Hz) 20.00 MHz 21.00 MHz 430.0 kHz -35.56 (-22.66) -20.01 M -35.71 (-22.71) 20.18 M 21.00 MHz 60.00 MHz 1.000 MHz -34.86 (-21.36) -21.39 M -33.90 (-20.90) 22.56 M 60.00 MHz 8.000 MHz 1.000 MHz -49.73 (-24.73) -60.45 M -46.92 (-21.92) 61.50 M 4.000 MHz 8.000 MHz 1.000 MHz - () - () - () - () - () - () - () - () - () - () - () - () - () - () - () - ()	60.0												
18.85 dBm / 40 MHz Lower Upper Start Freq Start Freq Integ BW dBm Lower Upper 20.00 MHz 21.00 MHz 430.0 kHz -35.56 (-22.66) -20.01 M -35.71 (-22.71) 20.18 M 21.00 MHz 60.00 MHz 1.000 MHz -34.86 (-21.86) -21.39 M -33.90 (-20.90) 22.56 M 60.00 MHz 8.000 MHz 1.000 MHz -49.73 (-24.73) -60.45 M -46.92 (-21.92) 61.50 M 4.000 MHz 8.000 MHz 1.000 MHz - () - () - () -	isp Center 3.	62500 GHz	Chan D	et: Aver	age, #Off	s Det: Ave	erage						
Start Freq Stop Freq Integ BW dBm ALimit(dB) Freq (Hz) dBm ALimit(dB) Freq (Hz) 20.00 MHz 21.00 MHz 430.0 kHz -35.56 (-22.56) -20.01 M -35.71 (-22.71) 20.18 M 21.00 MHz 60.00 MHz 1.000 MHz -34.86 (-21.86) -21.39 M -33.90 (-20.90) 22.56 M 60.00 MHz 90.00 MHz 1.000 MHz -49.73 (-24.73) -60.45 M -46.92 (-21.92) 61.50 M 4.000 MHz 8.000 MHz 1.000 MHz () () 8.000 MHz 12.50 MHz 1.000 MHz () () ()			Power										
20.00 MHz 21.00 MHz 430.0 kHz -35.56 (-22.56) -20.01 M -35.71 (-22.71) 20.18 M 21.00 MHz 60.00 MHz 1.000 MHz -34.86 (-21.86) -21.39 M -33.90 (-20.90) 22.56 M 60.00 MHz 90.00 MHz 1.000 MHz -49.73 (-24.73) -60.45 M -46.92 (-21.92) 61.50 M 4.000 MHz 8.000 MHz 10.00 MHz () () () ()	! Table			40 MHz									
21.00 MHz 60.00 MHz 1.000 MHz -34.86 (-21.86) -21.39 M -33.90 (-20.90) 22.56 M 60.00 MHz 90.00 MHz 1.000 MHz -49.73 (-24.73) -60.45 M -46.92 (-21.92) 61.50 M 4.000 MHz 8.000 MHz 1.000 MHz (-)	! Table			40 MHz					Upper				
60.00 MHz 90.00 MHz 1.000 MHz -49.73 (-24.73) -60.45 M -46.92 (-21.92) 61.50 M - 4.000 MHz 8.000 MHz 1.000 MHz ()	Start Freq	Stop Freq	18,85 dBm / Integ BW d	Bm	Lower ∆Limit(dB)	Freq (H			∆Limit(dB)				
4.000 MHz 8.000 MHz 1.000 MHz ()	Start Freq 20.00 MHz	Stop Freq 21.00 MHz	18,85 dBm / Integ BW d 430.0 kHz -	IBm 35.56	Lower ∆Limit(dB) (-22.56)	Freq (H -20.01	M	-35.71	∆Limit(dB) (-22.71)	20.18 M			
8.000 MHz 12.50 MHz 1.000 MHz - () - ()	Start Freq 20.00 MHz 21.00 MHz	Stop Freq 21.00 MHz 60.00 MHz	18.85 dBm / Integ BW d 430.0 kHz - 1.000 MHz -	IBm 35.56 34.86	Lower ∆Limit(dB) (-22.56) (-21.86)	Freq (H -20.01 -21.39	M	-35.71 -33.90	ΔLimit(dB) (-22.71) (-20.90)	20.18 M 22.56 M			
	Start Freq 20.00 MHz 21.00 MHz 60.00 MHz	Stop Freq 21.00 MHz 60.00 MHz 90.00 MHz	18,85 dBm / Integ BW d 430.0 kHz - 1.000 MHz - 1.000 MHz -	IBm 35.56 34.86 49.73	Lower ∆Limit(dB) (-22.56) (-21.86)	Freq (H -20.01 -21.39	M	-35.71 -33.90	∆Limit(dB) (-22.71) (-20.90) (-21.92)	20.18 M 22.56 M			
12 50 MHz 15 00 MHz 1 000 MHz m (m)	20.00 MHz 21.00 MHz 60.00 MHz 4.000 MHz	Stop Freq 21.00 MHz 60.00 MHz 90.00 MHz 8.000 MHz	18,85 dBm / Integ BW d 430.0 kHz - 1.000 MHz - 1.000 MHz - 1.000 MHz	IBm 35.56 34.86 49.73	Lower ∆Limit(dB) (-22.56) (-21.86) (-24.73) (-)	Freq (H -20.01 -21.39 -60.45	M M M	-35.71 -33.90 -46.92	∆Limit(dB) (-22.71) (-20.90) (-21.92) ()	20.18 M 22.56 M 61.50 M			Lo

PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0



8.5 Frequency Stability / Variation Of Ambient Temperature

PCC Channel:	55273	
PCC Frequency:	3553.3	MHz
PCC BandWidth:	5	MHz
SCC Channel:	55390	
SCC Frequency:	3565.0	MHz
SCC BandWidth:	20	MHz
Voltage :	3.880	VDC
LIMIT:	Emission must rer	main in band

Voltage	Power	Temp.	PF	РРМ		Error (MHz)
(%)	(VDC)	(°C)	PCC	SCC	PCC	SCC
100 %		+20(Ref)	0.027	-0.028	3553.30010	3564.99985
100 %		-30	0.035	-0.027	3553.30012	3564.99989
100 %		-20	0.023	0.021	3553.30004	3565.00006
100 %		-10	-0.035	0.023	3553.29985	3565.00009
100 %	3.880	0	0.033	0.026	3553.30004	3565.00009
100 %		10	0.029	0.024	3553.30001	3565.00002
100 %		30	0.021	0.033	3553.30000	3565.00007
100 %		40	-0.040	0.036	3553.29985	3565.00008
100 %		50	-0.042	0.031	3553.29981	3565.00008
Batt. Endpoint	3.300	20	0.029	-0.035	3553.30004	3564.99987



PCC Channel:	55295	
PCC Frequency:	3555.5	MHz
PCC BandWidth:	10	MHz
SCC Channel:	55439	
SCC Frequency:	3569.9	MHz
SCC BandWidth:	20	MHz
Voltage :	3.880	VDC
■ LIMIT:	Emission r	nust remain in band

Voltage	Power	Temp.	PF	РРМ		Error (MHz)
(%)	(VDC)	(°C)	PCC	SCC	PCC	SCC
100 %		+20(Ref)	0.033	0.037	3555.50005	3569.90007
100 %		-30	0.021	0.023	3555.50005	3569.90008
100 %		-20	0.035	0.035	3555.50012	3569.90007
100 %		-10	-0.049	-0.045	3555.49984	3569.89984
100 %	3.880	0	0.026	0.028	3555.50011	3569.90006
100 %		10	0.020	0.019	3555.50006	3569.90009
100 %		30	-0.047	0.020	3555.49982	3569.90005
100 %	-	40	0.034	0.017	3555.50009	3569.89999
100 %		50	0.031	-0.042	3555.50008	3569.89981
Batt. Endpoint	3.300	20	0.026	0.036	3555.50008	3569.90013



PCC Channel:	55318			
PCC Frequency:	3557.8	MHz		
PCC BandWidth:	15	MHz		
SCC Channel:	55489			
SCC Frequency:	3574.9	MHz		
SCC BandWidth:	20	MHz		
Voltage :	3.880	VDC		
LIMIT:	Emission m	Emission must remain in band		

Voltage	Power	Temp.	РРМ		Frequency Error (MHz)	
(%)	(VDC)	(°C)	PCC	SCC	PCC	SCC
100 %	3.880	+20(Ref)	0.025	0.036	3557.80007	3574.90008
100 %		-30	0.034	0.041	3557.80006	3574.90009
100 %		-20	0.032	-0.036	3557.80010	3574.89987
100 %		-10	-0.045	-0.036	3557.79979	3574.89990
100 %		0	0.036	-0.047	3557.80007	3574.89982
100 %		10	0.022	-0.036	3557.80011	3574.89986
100 %	-	30	0.038	0.024	3557.80008	3574.90003
100 %		40	0.026	0.033	3557.80001	3574.90012
100 %		50	-0.037	0.026	3557.79983	3574.90007
Batt. Endpoint	3.300	20	0.017	0.029	3557.80005	3574.90013



PCC Channel:	55340	
PCC Frequency:	3560.0	MHz
PCC BandWidth:	20	MHz
SCC Channel:	55538	
SCC Frequency:	3579.8	MHz
SCC BandWidth:	20	MHz
Voltage :	3.880	VDC
LIMIT:	Emission m	nust remain in band

Voltage	Power	Temp.	РРМ		Frequency	Error (MHz)
(%)	(VDC)	(°C)	PCC	SCC	PCC	SCC
100 %		+20(Ref)	-0.048	0.028	3559.99977	3579.80004
100 %		-30	-0.032	0.021	3559.99985	3579.80003
100 %		-20	0.022	0.019	3560.00001	3579.80002
100 %		-10	-0.040	0.027	3559.99978	3579.80005
100 %	3.880	0	0.039	-0.028	3560.00006	3579.79985
100 %		10	0.026	0.023	3560.00001	3579.80008
100 %		30	0.036	-0.040	3560.00011	3579.79985
100 %		40	0.032	-0.044	3560.00013	3579.79986
100 %		50	0.030	0.029	3560.00013	3579.80007
Batt. Endpoint	3.300	20	0.034	0.029	3560.00009	3579.80003



PCC Channel:	56523	
PCC Frequency:	3678.3	MHz
PCC BandWidth:	5	MHz
SCC Channel:	56640	
SCC Frequency:	3690.0	MHz
SCC BandWidth:	20	MHz
Voltage :	3.880	VDC
LIMIT:	Emission mu	ist remain in band

Voltage	Power	Temp.	РРМ		Frequency	Error (MHz)
(%)	(VDC)	(°C)	PCC	SCC	PCC	SCC
100 %		+20(Ref)	-0.038	0.037	3678.29985	3690.00012
100 %		-30	0.031	0.022	3678.30004	3690.00006
100 %		-20	-0.030	0.025	3678.29987	3690.00005
100 %		-10	0.030	-0.041	3678.30014	3689.99976
100 %	3.880	0	0.041	-0.037	3678.30012	3689.99982
100 %		10	0.027	0.026	3678.30005	3690.00002
100 %		30	0.019	-0.035	3678.30001	3689.99982
100 %		40	0.031	-0.044	3678.30003	3689.99986
100 %		50	0.027	0.028	3678.30004	3690.00002
Batt. Endpoint	3.300	20	0.036	0.020	3678.30012	3690.00010



56496	
3675.6	MHz
10	MHz
56640	
3690.0	MHz
20	MHz
3.880	VDC
Emission must	t remain in band
	3675.6 10 56640 3690.0 20 3.880

Voltage	Power	Temp.	РРМ		PPM Frequency Er	
(%)	(VDC)	(°C)	PCC	SCC	PCC	SCC
100 %		+20(Ref)	0.034	0.023	3675.60012	3690.00000
100 %		-30	0.031	0.018	3675.60011	3690.00000
100 %		-20	0.028	-0.034	3675.60010	3689.99982
100 %		-10	0.029	0.034	3675.60006	3690.00008
100 %	3.880	0	0.014	-0.042	3675.60000	3689.99983
100 %		10	0.030	0.029	3675.60005	3690.00008
100 %		30	-0.036	0.031	3675.59981	3690.00011
100 %		40	0.032	0.039	3675.60013	3690.00006
100 %		50	-0.038	0.019	3675.59981	3690.00003
Batt. Endpoint	3.300	20	0.040	0.029	3675.60013	3690.00002



PCC Channel:	56469	
PCC Frequency:	3672.9	MHz
PCC BandWidth:	15	MHz
SCC Channel:	56640	
SCC Frequency:	3690.0	MHz
SCC BandWidth:	20	MHz
Voltage:	3.880	VDC
■ LIMIT:	Emission mu	ıst remain in band
 SCC Frequency: SCC BandWidth: Voltage : 	3690.0 20 3.880	MHz VDC

Voltage	Power	Temp.	РРМ		Frequency	cy Error (MHz)	
(%)	(VDC)	(°C)	PCC	SCC	PCC	SCC	
100 %		+20(Ref)	0.025	-0.042	3672.90009	3689.99983	
100 %		-30	-0.050	0.038	3672.89982	3690.00006	
100 %		-20	-0.035	-0.034	3672.89983	3689.99984	
100 %		-10	0.028	-0.031	3672.90009	3689.99983	
100 %	3.880	0	0.030	0.019	3672.90004	3690.00008	
100 %		10	0.025	-0.041	3672.90002	3689.99985	
100 %		30	0.030	0.036	3672.90009	3690.00009	
100 %		40	0.040	0.024	3672.90006	3690.00009	
100 %		50	0.021	0.017	3672.90008	3690.00006	
Batt. Endpoint	3.300	20	0.035	0.031	3672.90009	3690.00005	



PCC Channel:	56442	
PCC Frequency:	3670.2	MHz
PCC BandWidth:	20	MHz
SCC Channel:	56640	
SCC Frequency:	3690.0	MHz
SCC BandWidth:	20	MHz
Voltage :	3.880	MHz
LIMIT:	Emission mu	ıst remain in band

Voltage	Power	Temp.	РРМ		Frequency	Error (MHz)
(%)	(VDC)	(°C)	PCC	SCC	PCC	SCC
100 %		+20(Ref)	0.036	-0.040	3670.20014	3689.99981
100 %		-30	0.019	0.027	3670.20000	3690.00001
100 %		-20	0.026	0.034	3670.20003	3690.00010
100 %		-10	0.030	0.042	3670.20010	3690.00008
100 %	3.880	0	0.032	-0.048	3670.20010	3689.99980
100 %		10	0.034	0.032	3670.20005	3690.00010
100 %		30	-0.038	0.035	3670.19989	3690.00004
100 %		40	-0.035	0.022	3670.19986	3690.00004
100 %		50	-0.037	0.026	3670.19980	3690.00007
Batt. Endpoint	3.300	20	-0.026	0.024	3670.19982	3690.00002



8.6 Radiated Spurious Emissions

PCC Channel :	<u>55340 (3560.0 MHz)</u>
PCC BW(MHz) :	<u>20</u>
PCC RB/ RB Offset :	1/99
SCC Channel :	55538 (3579.8 MHz)
■ SCC BW(MHz) :	<u>20</u>
SCC RB/ RB Offset :	<u>1/0</u>
DISTANCE:	<u>1 meters</u>
LIMIT:	-40.0 dBm

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)
7 139.80	-57.27	10.79	-58.63	4.59	V	-52.43
10 709.70	-58.35	11.34	-54.06	5.82	V	-48.54
14 279.60	-60.86	11.74	-49.80	6.79	V	-44.85



PCC Channel :	55891 (3615.1 MHz)
PCC BW(MHz):	<u>20</u>
PCC RB/ RB Offset :	1/99
SCC Channel :	56089 (3634.9 MHz)
SCC BW(MHz):	20
■ SCC RB/ RB Offset :	<u>1/0</u>
DISTANCE:	1 meters
■ LIMIT:	-40.0 dBm

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)
7 250.00	-59.48	10.74	-61.41	4.64	V	-55.31
10 875.00	-59.86	11.04	-52.91	5.72	V	-47.59
14 500.00	-60.98	11.45	-49.79	6.81	Н	-45.15



PCC Channel :	56442 (3670.2 MHz)
PCC BW(MHz):	<u>20</u>
PCC RB/ RB Offset :	1/99
SCC Channel :	56640 (3690.0 MHz)
SCC BW(MHz):	20
SCC RB/ RB Offset :	<u>1/0</u>
DISTANCE:	<u>1 meters</u>
■ LIMIT:	-40.0 dBm

Freq.(MHz)	Measured Level [dBm]	Ant. Gain (dBi)	Substitute Level [dBm]	C.L	Pol.	Result (dBm)
7 360.20	-58.75	10.83	-59.69	4.65	Н	-53.51
11 040.30	-57.61	10.97	-52.45	5.78	Н	-47.26
14 720.40	-61.48	11.30	-50.30	6.96	V	-45.96



8.7 Occupied Bandwidth

		РСС				SCC					
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	Data (MHz)	
5	55898	3615.8	QPSK	25/0	20	56015	3627.5	QPSK	100/0	22.932	
10	55896	3615.6	QPSK	50/0	20	56040	3630	QPSK	100/0	27.591	
15	55893	3615.3	QPSK	75/0	20	56064	3632.4	QPSK	100/0	32.624	
20	55965	3622.5	QPSK	100/0	5	56082	3634.2	QPSK	25/0	22.730	
20	55941	3620.1	QPSK	100/0	10	56085	3634.5	QPSK	50/0	27.766	
20	55916	3617.6	QPSK	100/0	15	56087	3634.7	QPSK	75/0	32.566	
20	55891	3615.1	QPSK	100/0	20	56089	3634.9	QPSK	100/0	37.313	

		PCC				SCC				
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	Data (MHz)
5	55898	3615.8	16QAM	25/0	20	56015	3627.5	16QAM	100/0	22.846
10	55896	3615.6	16QAM	50/0	20	56040	3630.0	16QAM	100/0	27.653
15	55893	3615.3	16QAM	75/0	20	56064	3632.4	16QAM	100/0	32.675
20	55965	3622.5	16QAM	100/0	5	56082	3634.2	16QAM	25/0	22.922
20	55941	3620.1	16QAM	100/0	10	56085	3634.5	16QAM	50/0	27.660
20	55916	3617.6	16QAM	100/0	15	56087	3634.7	16QAM	75/0	32.524
20	55891	3615.1	16QAM	100/0	20	56089	3634.9	16QAM	100/0	37.718



		PCC				SCC				
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	Data (MHz)
5	55898	3615.8	64QAM	25/0	20	56015	3627.5	64QAM	100/0	22.712
10	55896	3615.6	64QAM	50/0	20	56040	3630	64QAM	100/0	27.645
15	55893	3615.3	64QAM	75/0	20	56064	3632.4	64QAM	100/0	32.774
20	55965	3622.5	64QAM	100/0	5	56082	3634.2	64QAM	25/0	22.741
20	55941	3620.1	64QAM	100/0	10	56085	3634.5	64QAM	50/0	27.784
20	55916	3617.6	64QAM	100/0	15	56087	3634.7	64QAM	75/0	32.560
20	55891	3615.1	64QAM	100/0	20	56089	3634.9	64QAM	100/0	37.254

		PCC					SCC			
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	Data (MHz)
5	55898	3615.8	256QAM	25/0	20	56015	3627.5	256QAM	100/0	21.651
10	55896	3615.6	256QAM	50/0	20	56040	3630.0	256QAM	100/0	27.748
15	55893	3615.3	256QAM	75/0	20	56064	3632.4	256QAM	100/0	32.648
20	55965	3622.5	256QAM	100/0	5	56082	3634.2	256QAM	25/0	22.720
20	55941	3620.1	256QAM	100/0	10	56085	3634.5	256QAM	50/0	27.670
20	55916	3617.6	256QAM	100/0	15	56087	3634.7	256QAM	75/0	32.548
20	55891	3615.1	256QAM	100/0	20	56089	3634.9	256QAM	100/0	37.519



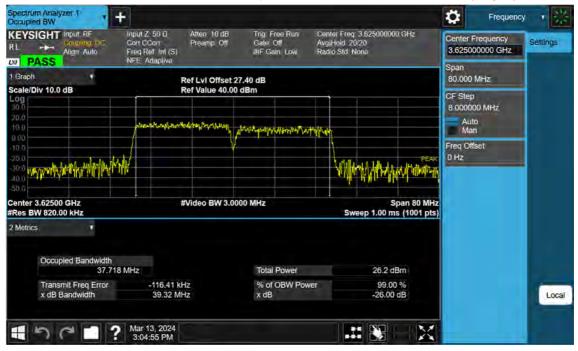
Note:

In order to simplify the report, attached plots were only Max.Bandwidth(20+20)

KEYSIGHT Input RF RL Input Z 50 0 Corr CCorr Auge Auto Atten: 10 dB Corr CCorr Auge Auto Trig: Free Run Gate: Off Preamp Off Conter Freq: 3.82500000 GHz AvgHold 2020 Radio Std None Center Frequency 3.62500000 GHz 10 PASS NFE: Adaptive Ref Lvi Offset 27.40 dB Ref Value 40.00 dBm Span 80.000 MHz Span 80.0000 MHz 200 000 Ref Value 40.00 dBm Freq Value 40.00 dBm Freq Offset 0 Hz Freq Offset 0 Hz	Settings
Bigsph Ref Lvi Offset 27.40 dB Span Scale/Div 10.0 dB Ref Value 40.00 dBm 80.000 MHz Log CF Step 8.00000 MHz 20.0 Image: Span 80.000 MHz 20.0 Image: Span Main 20.0 Image: Span Main 20.0 Image: Span Image: Span 20.0 Image: Span <t< th=""><th></th></t<>	
Log 30.0 20.0 10.0 0.00 0	
10.0 0.00 10.0 20.0	
10 0 20 0 30 0 40 0 Conditation while the set of th	
-30% produktive for the second s	
Center 3.62500 GHz #Video BW 3.0000 MHz Span 80 MHz #Res BW 820.00 kHz Sweep 1.00 ms (1001 pts)	
2 Metrics T	
Occupied Bandwidth 37.313 MHz Total Power 26.1 dBm	
Transmit Freq Error -271.51 kHz % of OBW Power 99.00 % x dB Bandwidth 39.56 MHz x dB -26.00 dB	Local

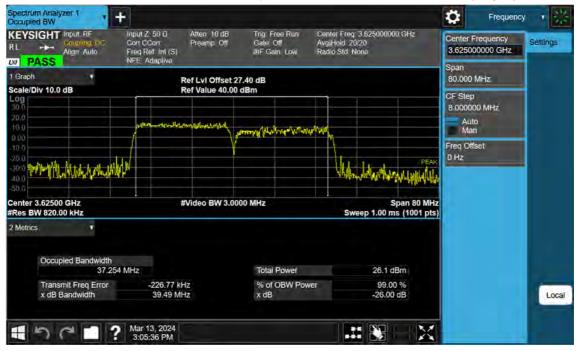
PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(QPSK)





PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(16QAM)





PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(64QAM)



	eq Ret Int (S) E Adaptive		jHold 20/20 lić Std None	3.625000000 GHz	Settings
PASS NFI Braph ale/Div 10.0 dB	Ref Lvi Offset 2 Ref Value 40.00			Span 80.000 MHz	
g 5,0 6,0		Rentond grap and the pp or a day day and the		CF Step 8.000000 MHz Auto Man	
000 00 00 00 00 00 00 00 00 00 00 00 00	V		PEAK balantarahantartarahanna	Freq Offset 0 Hz	
nter 3.62500 GHz es BW 820.00 kHz	#Video BW 3.00	DOO MHz	Span 80 MHz Sweep 1.00 ms (1001 pts)		
Vetrics Occupied Bandwidth 37,519 MHz	z	Total Power	25.6 dBm		
Transmit Freq Error x dB Bandwidth	-54.116 kHz 39.51 MHz	% of OBW Power x dB	99,00 % -26.00 dB		Loc

PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(256QAM))



8.8 Peak- to- Average Ratio

		РСС				SCC					
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	Data (dB)	
5	55898	3615.8	QPSK	25/0	20	56015	3627.5	QPSK	100/0	5.44	
10	55896	3615.6	QPSK	50/0	20	56040	3630	QPSK	100/0	5.42	
15	55893	3615.3	QPSK	75/0	20	56064	3632.4	QPSK	100/0	5.48	
20	55965	3622.5	QPSK	100/0	5	56082	3634.2	QPSK	25/0	5.55	
20	55941	3620.1	QPSK	100/0	10	56085	3634.5	QPSK	50/0	5.59	
20	55916	3617.6	QPSK	100/0	15	56087	3634.7	QPSK	75/0	5.56	
20	55891	3615.1	QPSK	100/0	20	56089	3634.9	QPSK	100/0	5.57	

		PCC					SCC			
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	Data (dB)
5	55898	3615.8	16QAM	25/0	20	56015	3627.5	16QAM	100/0	6.46
10	55896	3615.6	16QAM	50/0	20	56040	3630.0	16QAM	100/0	6.39
15	55893	3615.3	16QAM	75/0	20	56064	3632.4	16QAM	100/0	6.33
20	55965	3622.5	16QAM	100/0	5	56082	3634.2	16QAM	25/0	6.41
20	55941	3620.1	16QAM	100/0	10	56085	3634.5	16QAM	50/0	6.39
20	55916	3617.6	16QAM	100/0	15	56087	3634.7	16QAM	75/0	6.42
20	55891	3615.1	16QAM	100/0	20	56089	3634.9	16QAM	100/0	6.47



PCC										
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	Data (dB)
5	55898	3615.8	64QAM	25/0	20	56015	3627.5	64QAM	100/0	6.97
10	55896	3615.6	64QAM	50/0	20	56040	3630	64QAM	100/0	6.96
15	55893	3615.3	64QAM	75/0	20	56064	3632.4	64QAM	100/0	6.83
20	55965	3622.5	64QAM	100/0	5	56082	3634.2	64QAM	25/0	7.15
20	55941	3620.1	64QAM	100/0	10	56085	3634.5	64QAM	50/0	6.86
20	55916	3617.6	64QAM	100/0	15	56087	3634.7	64QAM	75/0	6.80
20	55891	3615.1	64QAM	100/0	20	56089	3634.9	64QAM	100/0	6.96

	PCC					SCC						
BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	BW [MHz]	Ch	Freq [MHz]	Mod	RB/ Offset	Data (dB)		
5	55898	3615.8	256QAM	25/0	20	56015	3627.5	256QAM	100/0	7.32		
10	55896	3615.6	256QAM	50/0	20	56040	3630	256QAM	100/0	7.06		
15	55893	3615.3	256QAM	75/0	20	56064	3632.4	256QAM	100/0	6.95		
20	55965	3622.5	256QAM	100/0	5	56082	3634.2	256QAM	25/0	7.33		
20	55941	3620.1	256QAM	100/0	10	56085	3634.5	256QAM	50/0	6.95		
20	55916	3617.6	256QAM	100/0	15	56087	3634.7	256QAM	75/0	6.94		
20	55891	3615.1	256QAM	100/0	20	56089	3634.9	256QAM	100/0	7.15		



Note:

In order to simplify the report, attached plots were only Max.Bandwidth(20+20)

	uplina BC Cor		20 dB Trig:RFBurs np Off #IFGain Lov		Center Frequency 3.625000000 GHz	Setting
trics Average Por	T	2 Graph Gaussian			CF Step 35,000000 MHz Auto Man	
	18,96 dBm 44,58 % at 0 dB	10.5			Freq Offset 0 Hz	
10.0 % 1.0 %	2.94 dB 4.90 dB	i %				
0.1 % 0.01 %	5.57 dB 5.86 dB	0)%				
0.001 % 0.0001 %	6.05 dB 6.14 dB	0.01 %				
Peak	6.18 dB 25.14 dBm	0.001 %				
		0.000 dB Info BW 40.000	MHz	20.00 dB		L

PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(QPSK)





PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(16QAM)





PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(64QAM)





PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0_(256QAM)



8.9 Adjacent Channel Leakage Ratio(ACLR)

Operating		Р	сс			S	сс	Adjacent Channel Leakage Ratio(dB)		
frequency	BW [MHz]	Ch.	Freq. (MHz)	RB/ Offset	BW [MHz]	Ch.	Freq. (MHz)	RB/ Offset	Lower Side	Upper Side
Low	20	55340	3560.0	100/0	20	55538	3579.8	100/0	40.74	45.72
Mid	5	55898	3615.8	25/0	20	56015	3627.5	100/0	36.00	48.04
High	20	56442	3670.2	100/0	20	56640	3690.0	100/0	41.95	45.88
Mid	20	55891	3615.1	100/0	20	56089	3634.9	100/0	40.51	44.36
			Lir	nit (dB)					ACLR > 30 dB	ACLR > 30 dB

Note:

1. Duty Cycle factor already applied on the factor.

- Duty Cycle factor(dB) = 3.979

- Factor(dB) = Duty Cycle factor + Cable Loss + Ext. Attenuator + Power Splitter



	plina DC Corr CC	orr Preamp C of Int (S) PNO Bes	off Gate Off	Center Freq 3.569900000 GHz Avg Hold: 10/10 Radio Std: None Noise Correction: Off	Center Frequency 3.569900000 GHz	Séttings
Graph cale/Div 10.0 dB	*	Ref Lvi Off Ref Value 3	set 31.08 dB 0.00 dBm		120.000000 MHz	
20 0 0.0 0.00 10.0 20 0	-40.7 dBc	jatoniyawananaa	18 dBm	-45.7 dBc	CF Step 12,000000 MHz Auto Man	
30.0 40.0 50.7		ente		anna ann ann ann ann ann ann ann ann an	Freq Offset 0 Hz	1
enter 3,56990 GH es BW 1.1 MHz	z	#Video BW	4.0000 MHz*	Span 120 MH #Sweep 1.00 s (1001 pts		
				Howeep 1.00 3 (1001 pa		
123	-			Honey 100 3 (1001 pa		
Metrics Total Car Pwr	▼ 11.797 dBm/40.0	0 MHz	Measure Tra Trace Type			
Metrics Total Car Pwr		Lower ACP	Trace Type	ce Trace 1		
2 Metrics Total Car Pwr Total PSD	11.797 dBm/40.0 Integ BW dB	Lower ACP Ic dBm c	Trace Type Reference A	ce Trace 1 Trace Average (Active) Upper CP Reference		

PCC 20 MHz Ch55340 RB100 Offset0, SCC 20 MHz Ch55538 RB100 Offset0





PCC 5 MHz Ch55898 RB25 Offset0, SCC 20 MHz Ch56015 RB100 Offset0



	Auto Free		Atten: 14 dB Preamp: Off PNO: Best Wide	Trig Free Run Gate Off IF Gain Low	Center Fre Avg Hold Radio Std Noise Com	None	Hz	and the second second	requency 0000 GHz	Settings
Graph cale/Div 10.0 dB			ef LvI Offset 31.0 ef Value 30.00 dB					120.000	000 MHz	
	-42.0 dBc		11.7 dBm	manan		-45.9 dBc		CF Step 12,0000 Auto Mar		
30.0 30.0 50.0 30.0		and were			Lasternationer	******		Freq Offs 0 Hz	sel	
enter 3.68010 GHz es BW 1.1 MHz	2.	#V	/ideo BW 4.0000 I	MHz"	#	Span Sweep 1.00 s ('	120 MHz 1001 pts)			
Metrics Total Car Pwr Total PSD	T 11.725 dBm/4	0.00 MHz		Measure Tr Trace Type		Trace Average	Trace 1 (Active)			
	Integ BW	ACP dBc dBn -41.95 -30.		ce Car# dBc 1 _45.88	Upper ACP dBm -34.16	Reference dBm Car # 11.72 1	Filter -3 dB			
Offs Freq A 40.00 MHz										

PCC 20 MHz Ch56442 RB100 Offset0, SCC 20 MHz Ch56640 RB100 Offset0



	L RF input Z: 5 Input DC Corr CCo Auto Freq Ref NFE Ada	rr Preamp Off Int (S) PNO Best Wide	Trig Free Run Gale Off IF Gain Low	Center Freq 3.625000000 GF Avg Flold 10/10 Radio Std None Noise Correction: Off	3.	enter Frequency 625000000 GHz ban	Settings
Graph cale/Div 10.0 dB		Ref LvI Offset 31. Ref Value 30.00 d			1	20.000000 MHz	
	-40.5 dBc	18.5 dB	m 	-44.4 dBc		F Step 2,000000 MHz Auto Man	
00.0 00.0 00.0 00.0				marile management	0	eq Offset Hz	
enter 3.62500 GH es BW 1.1 MHz		#Video BW 4.0000	MHz"	Span #Sweep 1.00 s (1	120 MHz 001 pts)		
Metrics	*		Measure Trac	-	_		
Total Car Pwr Total PSD	18.489 dBm/40.00	MHz 	Trace Type	ce Trace Average (Trace 1 Active)		
	Integ BW dBc	Lower ACP Refere dBm dBm	Trace Type	Trace Average (Upper CP Reference dBm dBm Car #			
Total PSD Offs Freq	Integ BW dBc	Lower ACP Refere dBm dBm	Trace Type ence AC Car # dBc	Trace Average (Upper CP Reference dBm dBm Car #	Active) Filter		

PCC 20 MHz Ch55891 RB100 Offset0, SCC 20 MHz Ch56089 RB100 Offset0



9. ANNEX A_ TEST SETUP PHOTO

Please refer to test setup photo file no. as follows;

No.	Description
1	HCT-RF-2404-FC039-P